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## Original Communications.

### *CLINICAL THERAPEUTICS—LECTURES ON THE TREATMENT OF HEPATIC AFFECTIONS.**

By Professor Dujardin-Beaumetz,† Paris, France.

#### LECTURE I.—THE LIVER AS AN ORGAN OF ANTISEPSIS (PHYSIOLOGICAL CONSIDERATIONS).

GENTLEMEN :—I desire this year to devote my conferences in "Clinical Therapeutics" to some practical considerations on "Diseases of the Liver." We have here a subject for study which will, I hope, command much interest, and from which you will derive results useful in your practice, and I will, if you please, begin by some general considerations.

The great size of the hepatic gland has long attracted the attention of observers. The Chinese, struck by the color of this gland, attributed all the modifications of coloration of the skin to troubles having their origin in the liver. In Grecian antiquity it was on the aspect of the liver of animals offered in sacrifices that the Karuspices based their prognostications. Plato made of it the seat of the desires, and Hippocrates the origin of

* From advance sheets, revised by the author (translated by E. P. Hurd, M.D.). Lectures delivered in Cochin Hospital, Paris, France.

† Member of the Academy of Medicine, Physician to the Cochin Hospital, Paris, France.

the veins. It was Galen who attributed to the liver the most important *rôle*. According to him, this organ furnishes to the blood the nutritive juices necessary for the formation of that fluid. Moreover, it secretes not only bile but atrabile; also all the dyscrasic maladies were, in the opinion of the physician of Pergamus, dependent on some hepatic derangement.

Do not forget, in fact, that the physicians of ancient Greece noted very frequently various disturbances which they referred to the liver. Hepatic congestions are very often observed in this part of our continent, and even to-day the Grecian physicians call attention to the frequency of bilious states as complicating inflammatory diseases.

Till the seventeenth century the doctrines of Galen dominated the medical profession, and a preponderant *rôle* was assigned to the bile, and especially to the atrabile, in the pathogeny of humoral affections. But a discovery made June 23, 1622, in the amphitheatre of anatomy at Pavia by Professor Gaspard Aselli, of Cremona, was destined to relegate the functions of the liver to a much humbler plane.

Aselli, on opening the abdomen of a living dog, had just made the momentous discovery of the chyliferous vessels, and, persuaded of the importance of this new fact of physiology, he uttered, like Archimedes on a similar occasion, the cry "Eureka!" Thereafter to these chyliferous vessels was attributed the important function which heretofore had been assigned to the liver.

Notwithstanding the influence of Paracelsus and Boerhaave, who espoused anew the teachings of Galen, and made of the liver an abdominal heart, these notions did not find acceptance, and the liver, considered as a simple excretory organ of the bile, henceforth occupied a place much inferior to what it once held in the glandular system of the economy.

At the same time, pathological anatomy had pointed out, rather as curiosities, certain interesting facts, but these remained isolated, unfruitful in practical applications, and we have to come down to the middle of the eighteenth century to find the first treatise devoted to the study of hepatic diseases; this treatise is the work of Bianchi, dates from 1725, and is entitled "Historica Hepatica." From this time successively appeared in England the treatises of Saunders in 1768, of Bath in 1777; and, lastly, the first French treatise was published in 1812, and was the work of Portal. This production is a weak performance, and is rather a reproduction of English works than an original monograph of the author.

Since that time very important works have been published on the pathology of the liver. Frerichs, in Germany, Murchison, Harley, Robert Saunby, in England, Charcot, Hanot, Gilbert, Chanfard, in France, have given us very precise data on the pathology of the liver, which will be utilized in the course of these lectures. But I cannot undertake to venture into all departments of this great subject, and must refer you for a more complete treatise to the second volume of my "Leçons de Clinique Thérapeutique," of which an English translation is published by G. S. Davis,* Detroit. In this course I have in view a different plan. Basing myself on the recent discoveries which physiology has made respecting the hepatic functions, I shall give you, under the head of general considerations, the clinical and therapeutic conclusions suggested by these researches.

These physiological investigations have restored the liver to the high position which it should occupy, and if we may say that by its volume and its weight it holds the first place among the glands, it must be acknowledged that from other considerations this pre-eminence cannot be claimed for any other organ. The liver has, then, regained to-day the preeminent importance which Galen assigned to it.

Considered in its entirety, the liver accomplishes two great functions. It is a digestive gland and a blood gland. As a digestive organ, the liver is the seat of important functions. It is a barrier interposed between the digestive tube and the rest of the economy to arrest and destroy the alkaloids and toxines introduced as food or medicine into the alimentary canal. It is, then, an antiseptic organ.

It is, moreover, an organ one of whose offices is the secretion of the bile, which, as you see, plays so considerable a part in the regular operations of the alimentary canal. Lastly, it is the organ of the function which is peculiar to it,—namely, that of regulating physiological glycæmia, whereby is furnished to the blood the proportion of glucose necessary for the functions of life.

We may still to all these great functions

* "Diseases of the Liver," G. S. Davis, Detroit, 1887; "Diseases of the Kidneys," G. S. Davis, Detroit, 1887.

add another,—*i.e.*, that of regulating the absorption and production of fat.

As a blood organ, not only may the liver be considered as an abdominal heart, but it also plays an important part in the metamorphosis of the globules, and in the production of combustions and of animal heat,—that is to say, in the genesis of urea.

Hence, then, to sum up, from the point of view of its digestive functions, we shall have to study an antiseptic liver, a biliary liver, a glycogenic liver, and an adipogenous liver.

From the point of view of its sanguineous functions, we shall have to examine an hæmatopoietic liver and a calorigenous liver.

I propose to study each of these functions of the liver separately, and will begin with the antiseptic liver. I shall leave to one side the adipogenous liver, but will dwell at some length on the various phases of function given above.

Each of my lectures will be divided into two parts. In the one, I shall inquire on what physiological and anatomical bases the function which I attribute to the liver may be established. Then, in a second part, I shall deduce certain clinical and therapeutic conclusions.

As you see, this is the plan which I have adopted in my "Clinical Therapeutics." The success of that work, which has just reached its sixth edition, shows the practical value of this method which characterizes those writings to which I have devoted so much of my medical life.

### THE ANTISEPTIC LIVER.

When we take a general survey of the various phases through which has passed this interesting question of the liver considered as a destroyer of poisons, we see that we may distinguish three periods. In the first, it is the mineral poisons which were studied particularly. Orfila, then Paganuzzi and Lusanna, showed that mineral poisons accumulate in the liver. Arsenic, lead, mercury, and iron are found in this gland, and it is from that period that legal medicine began to insist on examinations of the liver in judicial autopsies, with the intent of seeking for traces of the poison which was supposed to have been administered.

In a second period, which begins in 1877, by the researches of Schiff, Hegger, and Jacques, the destructive action of the liver on certain vegetable alkaloids, as curarine, daturine, morphine, and strychnine, was studied.

Lastly, in a third period, it is no longer the destructive action of the liver on the vegetable alkaloids which is the object of inquiry, but the toxines and toxalbumines which the liver with extreme rapidity renders inert; and it is here that we place the important labors of Bouchard and the remarkable thesis of his pupil Roger, dated 1886,* from which I borrow the greater part of the facts which serve for the basis of this lecture.

What are the operative methods which physiologists have put in execution in order to study this special action of the liver on poisons? These procedures are numerous, and may be summed up in three groups.

The most primitive of these procedures—that which was put in operation by Orfila—consists in analyzing the hepatic parenchyma, and therein seeking for the metal which caused the poisoning.

Schiff employed a much more physiological method. He injected for comparison medicinal alkaloidal substances by the veins of the general circulation, and by the veins of the portal circulation. He then showed the different effects from a toxic point of view produced by the doses administered by these two channels. He employed chiefly as subjects of experimentation the rabbit and the dog.

In the case of the inferior animals,—the frog, for instance,—Schiff made use of another method quite as ingenious. This was to deprive the frog of its liver, an operation relatively easy, and which permits the animal to survive for three or four days. He then compared the toxic action of the vegetable alkaloids in sound frogs and in frogs deprived of their liver.

The Belgian experimenters, Hegger and Jacques, have employed a quite different method,—that of the artificial circulation of Ludwig. This is their *modus operandi:*

Immediately after having killed the dog and tied the portal vein, as well as the inferior vena cava, ablation of the liver is performed, that portion of the ribs and of the vertebral column which is adherent to the liver being preserved intact, as well as the diaphragm; the organ thus detached is placed on a stand, which allows a current of water or of blood to pass through the substance of the liver through its afferent and efferent vessels; a careful examination is then made to see what has become of the toxic agents which have thus been introduced by the portal vein.

* Roger, "Action du Foie sur les Poisons" (*Thèse de Paris*, 1886).

Add, finally, that Bouchard and Roger have also studied from a toxic point of view the blood of the general circulation and that of the portal vein; and, lastly, that of the inferior cava. Let us examine now, as briefly as possible, the results furnished by these different researches.

interesting production. Lastly, Roger has repeated all these experiments, and completed them.*

The following table, which I borrow from the latter work, will show you the evident action of the liver on the alkaloids, and how destructive this action is to certain of them.

*Table showing the Action of the Liver on Alkaloids other than Nicotine.*

| Substances injected. | Species under experimentation. | State of the animal. | Where the injection was made. | Mean per kilogramme of fatal doses. |
|---|---|---|---|---|
| | | | | Grain. |
| Sulphovinate of quinine | Hare. | Sound. | Vein of ear. | .06 |
| | | | Intestinal vein. | .16 |
| Muriate of morphine | Hare. | Sound. | Vein of ear. | .35 |
| | | | Intestinal vein. | .68 |
| Neutral sulphate of atropine | Hare. | Sound. | Vein of ear. | .41 |
| | | | Intestinal vein. | .192 |
| Hyoscyamine | Frog. | Sound. / Without liver. | Lymphatic sac. | .2 / .1 |
| | | | | Milligramme. |
| Sulphate of strychnine | Dog. | Sound. | Jugular vein. / Mesenteric vein. | .285 |
| Sulphate of veratrine | Frog. | Sound. / Without liver. | Lymphatic sac. | .016 / .119 |
| Cicatine | Frog. | Healthy. / Without liver. | Subcutaneous injection. | .075 |
| Curare | Hare. | Sound. | Vein of ear. | .0024 |
| | | | Intestinal vein. | .0066 |

I shall be very brief on the action of the liver upon mineral substances. Arsenic, copper, antimony, and mercury accumulate in the liver. Roger, who had resumed these experiments, has shown that the liver has no action on the salts of potassium and sodium; that, on the other hand, there is a very marked action on the salts of iron, the lactate and peroxide. When you inject by a mesenteric vein a solution of the lactate, the toxicity is three times less than when the injection is made by the veins of the general circulation.

I recall to mind while on this subject that Paganuzzi, of Padua, has already urged this very point, and that Lusanna has maintained that the reconstituent, and especially the hæmatopoietic effects of the medicinal doses of iron are due to the intimate action of the salts of iron on the hepatic cells; the ferruginous preparations introduced by digestion into the liver being eliminated with the bile and taken up again on the surface of the intestine by the portal vessels.

The action of the liver on the vegetable alkaloids is very important. Hegger was the first, in 1873, to indicate this destructive action, but we owe to Schiff the most interesting treatise on the subject; this work appeared in 1877. Three years later appeared the thesis of Jacques, a very complete and

The figures laid down in this table sufficiently speak for themselves; thus, with regard to quinine, the fatal dose for the hare per kilogramme of the weight of the body is 6 centigrammes, when the poison is injected by the vein of the ear, and it takes 16 centigrammes to produce the same result when the poison is introduced by the intestinal veins; almost three times the quantity.

In the case of atropine, the figure is still higher,—41 milligrammes by the veins of the ear and 192 milligrammes by the intestinal veins. The liver here destroys more than three-fourths of the poison.

In the case of hyoscyamine, when administered to the frog, without or with liver, the difference is almost double; it takes 2 decigrammes to kill the sound animal, and, if you remove the liver, 1 decigramme is sufficient.

But it is with nicotine that the destructive action of the liver attains its maximum, at least in the frog. In a sound frog it takes 34 milligrammes to produce death; remove the liver,

* Hegger, "Experiments on the Circulation of the Liver in Isolated Organs" (*Thèse d'Agrégation*, Brussels, 1873); Schiff, "Archives des Sciences Physiologiques et Naturelles," Geneva, 1877; Jacques, "Essai sur la Localisation des Alkaloïdes dans le Foie" (*Thèse d'Agrégation*, Brussels, 1880); Roger, "Action du Foie sur les Poisons" (*Thèse de Paris*, 1888).

and 8 milligrammes suffice. And *à propos* of nicotine, there is an operative method, of which I have not spoken to you, and which well shows that it is the hepatic tissue which acts in this case. The method consists in triturating the alkaloid with hepatic substance, then in making the injection in the veins of the ear, and this is what is observed: while without trituration it requires 7 milligrammes per kilogramme of the weight of the body to kill the hare, after trituration with the live tissue it takes 15.34 to produce mortal effects.

What therapeutic consequences may we derive from these results? Consequences of the highest interest. This destruction of vegeta ble alkaloids by the liver explains to us the great difference which exists between the administration of medicaments by the mouth and by the hypodermic method.

When given by the mouth, the medicaments may be modified by the action of the gastric juice and of the digestive juices; but, above all, they encounter this living barrier,—the liver,—which destroys them in part. There is nothing like this when the medicine is introduced subcutaneously, and you readily understand the advantage of utilizing this channel when we want to get the full benefit of active alkaloids.

Moreover, this fact was known long ago in its application to curare and the venom of certain serpents. We know, in fact, that one may practise suction of wounds made with poisoned arrows, or even of the bites of venomous animals, without experiencing the least poisonous effect; and Claude Bernard has even carried the analysis of this problem farther with curare, in showing that it is not to the gastric juice that we owe this diminution of toxicity, since, in injecting a mixture of gastric juice and curare under the skin, he caused the death of the animals, just as when the curare was used alone. To-day we have an explanation of this fact by the destructive action of the liver.

It is probable that the liver does not completely destroy the alkaloids; it seems to store away a certain portion, which later on is eliminated by the bile and poured into the intestine. It is this fact which explains the accumulation of doses in the case of certain alkaloids or glucosides. We, in fact, see daily therapeutic doses continued for a long time determine toxic effects. It is probable that we may explain this fact either by supposing a diminution in the destructive action of the liver, or that the bile, on being poured into the duodenum, carries with it a certain quantity of the toxic product, which adds itself to that introduced by the mouth, and thus transforms the therapeutic into a toxic dose.

But the most interesting point in this question of the antiseptic liver is that which concerns the organic alkaloids. Some physiologists have been long struck with the fact that, despite the introduction into the digestive tube of numerous toxic substances, the individual did not experience symptoms of poisoning, and Stich was the first to express the opinion that there must be some place in the economy where these substances were neutralized. This point he believed to be the intestinal mucosa, which constituted for him a veritable dialyzing membrane opposing the absorption of poisons contained in the intestine. Hofmeister attributed this same property to the white corpuscles.

Then, after the publication of Schiff's researches, this destructive *rôle* was attributed to the liver, and it was Lautenbach who first gave most precise expression to this fact. He maintained that not only does the liver destroy poisons introduced into the economy, but also that in the physiological state the organism produces a poison which is destroyed by the hepatic gland as fast as it is formed. The work of Lautenbach appeared in 1877, and nobody had then heard of the labors of A. Gautier, and the wide application which he gave to his discoveries.

Since then the investigations of Bouchard and the splendid experiments of his pupil Roger have enabled us to affirm that one of the most important functions of the liver is to destroy not only the toxines introduced by the food, but also those which are fabricated by our living organism; it is on this latter point that I wish to dwell during the remainder of this lecture.

Whence come these toxines? They have four origins. First, from food introduced into the stomach. As we often make use in our daily fare of meats from animals which have been killed for several days, we thereby ingest a certain number of toxic ptomaïnes. I do not design to return to this question of alimentary ptomaïnes, which I have many times taken up in my lectures in this amphitheatre, and will refer you in particular to the lectures on prophylaxis by alimentation and the vegetarian regimen.*

The second source of ptomaïnes is found

* THERAPEUTIC GAZETTE, 1889, "Prophylaxis by Alimentation;" *ibid.*, March 15, 1890, "Vegetarianism from a Therapeutic Point of View," etc.

in the fermentations which take place in the interior of the digestive tube. Tanret was the first to show that the gastric juice, in acting on albuminoid matters, furnished bodies with alkaloidal reactions. Since then it has been demonstrated that there are produced, especially in alterations of the mucous membrane of the stomach and intestines, a great number of toxic substances, whose aggregate constitutes what may be called intestinal putridity.

The third source is found in the numerous microbes which exist in the normal or abnormal state in the digestive tube from the mouth to the anus, microbes which secrete both diastases and toxines.

Lastly, the final source is the life of the cells. Gautier has shown, in fact, that the organic cell fabricates toxines, just as the vegetable cell does, and these toxines find in the intestine a channel of elimination. We shall even see, when I come to speak of the liver as a biliary organ, that the bile constitutes a medium of elimination for these toxines, more active, perhaps, than the kidney.

To sum up, then, from these multiple origins results the undeniable fact that the intestinal contents enclose a great number of toxic alkaloidal substances, which might easily enter the circulation if, thanks to the portal circulation and the antiseptic function of the hepatic cells, they were not at each instant destroyed and neutralized.

How may we demonstrate experimentally the antiseptic preservative *rôle* of the liver? By two processes, which furnish us positive data.

The first consists in taking a certain number of toxic products found in the intestine and inoculating them in animals,—the hare, for instance,—using at one time, for purposes of comparison, a vein of the general circulation,—the vein of the ear, for instance,—and at another time a branch of the portal vein; or, if one prefers, one may operate with the same products on healthy frogs and on frogs deprived of their livers. This is what Roger has done, and the following table shows to what results he has attained.

| Substances injected. | Hares.—Injection by | | Relation between the toxicities following the channel of injection. |
|---|---|---|---|
| | Peripheral vein. | Portal vein. | |
| Putrid matter, alcoholic extract | 22.2 | 54.2 | 2.26 |
| Peptones | 1.69 | 4.07 | 2.4 |
| Muriate of ammonia | 0.39 | 0.34 | 2.4 |
| Carbonate of ammonia | 0.248 | 0.401 | 1.617 |
| Lactate of ammonia | 0.634 | 1.13 | 1.79 |
| Alcohol | 7.77 | 9.44 | 1.21 |
| Acetone | 6.94 | 6.96 | 1.00 |
| Glycerin | 10.7 | 8.07 | 1.00 |
| Beef bile | 4.0 | 6.00 | 1.5 |
| Human urine | 34.28 | 67.42 | 1.96 |
| | Frogs. | | |
| | Without liver. | Healthy. | |
| Alcoholic extract of intestinal matters { of hare | 7.7 | 27.7 | 3.59 |
| Alcoholic extract of intestinal matters { of dog | 9.37 | 19.23 | 2.06 |

This table puts in clear light the preservative *rôle* of the liver.

But the second mode of procedure gives results still more striking; it consists in studying the varying toxicity of the blood in the hepatic veins and in the portal vein.

If what I have told you is true, the blood of the portal vein should be much more toxic than that of the hepatic veins. Now, the table which follows, which sums up the experiments of Roger, confirms absolutely my assertions.

TOXICITY OF DEFIBRINATED BLOOD OF THE DOG INJECTED INTO THE HARE.

| | Average toxicity per milligramme of the hare's weight. C.c. |
|---|---|
| Blood in general | 24.4 |
| Blood of the hepatic veins | 23.3 |
| Blood of the portal vein | 9.0 |
| | Mean toxicity to the kilogramme of a hare. |
| Blood in general | 24.4 |
| Blood of the hepatic veins | 23.3 |
| Blood of the portal vein | 9.0 |

Now, we see that while the blood of the hepatic veins is of a toxicity slightly inferior to that of the blood in general, being represented by 23.3 cubic centimetres per kilogramme of the weight of the hare, that of the portal vein is represented by 9 cubic centimetres,—*i.e.*, by a figure almost three times as great.

So, then, I have shown you, and that, too, in a way that cannot be gainsaid, that the liver arrests and renders innocuous not only mineral poisons, but also vegetable alkaloids and animal toxines.

In what point of the liver is this special antiseptic property seated? Here also Roger has endeavored to press the problem as far as possible. He has shown, as I have already told you, that it is the hepatic parenchyma which has this special property, since it is sufficient to blend with the toxic substances particles of the liver in order to diminish the toxicity of these products.

It is probable that it is in the hepatic cell itself that the destruction of these poisons takes place, for, according to Roger, there is always a direct relation between the glycogenic functions of the liver and its antiseptic functions. Roger thinks even that perhaps the sugar, or some modifications of the glycoses, may, by their action on the vegetable or organic alkaloids, diminish their toxic properties.

These points being now established, let us examine what conclusions clinical therapeutics may derive from them for the treatment of diseases. This will be the subject of the next lecture.

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## *THE TREATMENT OF URÆMIC COMA AND CONVULSIONS.*

By John Ferguson, M.A., M.D. (Toronto), L.R.C.P. (Edin.),* Toronto, Canada.

THERE are few questions of greater moment to the active practising physician than the treatment and management of cases of uræmia, with the concomitant coma and convulsions. That much can be done is a matter of congratulation; and, if the proper steps be taken in such cases, many precious lives may be saved that would be lost were the application of remedies ill-timed or unsuited. As the object of this paper is purely a therapeutic one, pathology will only be introduced as occasion may require, for the purpose of making clear any certain therapeutic procedure.

When from some cause or other there is a nephritis, and a free elimination of albumen in the urine, we know that other products are being retained in the blood that are bound to effect serious damage or cause a fatal catastrophe. The quantity of uric acid and urea thus retained has given rise to the terms uræmic coma and uræmic convulsions. In the therapeutics of such cases, we must have regard to two main points,—the elimination from the blood of these constituents and the improvement of the condition of the kidneys, so as to get them as speedily as possible to do their work more nearly after the normal standard.

Should we be fortunate enough to see the patient before the advent of coma or convulsions, the best course to adopt is to put the patient to bed, even although the amount of albumen in the urine be not great, say not more than five per cent. The effect of rest for a period has a very marked influence on the amount of albumen eliminated daily by the kidneys. Muscular exertion causes a much greater quantity of albumen to appear in the urine than would be the case with the passive condition of rest in bed. Such mild cases are not at all common in connection with scarlatina, diphtheria, exposure to wet cold, or during pregnancy.

With regard to diet, farinaceous and vegetable food may be used in fair quantities. The only animal food, however, should be milk. This is a matter of prime importance, as the formation of uric acid in the system is reduced to a minimum, the chances of severe complications greatly obviated, and the work of the kidneys lessened very materially.

The administration of medicine is important. The drug I like best in these cases is magnesii sulphas. This I always give in the form of a concentrated solution; and in such doses, undiluted, as shall move the bowels from four to six times in twenty-four hours. In mild cases it is not necessary to give diuretics. In any case, however, where there is uræmia or uric acidæmia, the pulse has a plus tension, and to relax this is often of much service in the management of these attacks of albuminuria. For this purpose I have tried the chief arterial depressants, and can speak in terms of greatest confidence of salicylate of potassium or sodium, aided by a good preparation of aconitine.

* Demonstrator of Anatomy, University of Toronto Medical College, and Lecturer on Nervous Diseases.

The salicylates cause free perspiration if the patient be well covered with bedclothing, while at the same time they wash out of the system the uric acid in the blood, which keeps up a hard pulse and tends to produce convulsive movements. As the magnesium sulphate is unirritating, its use may be continued for any necessary time.

But let us take a case a grade worse. It may be after scarlatina, or during pregnancy, or from some other cause. The urine is very much loaded with albumen. There may be a half or more of the total volume coagulum when tested. The hands and face are swollen; the patient has headache, sometimes very intense; muscæ volitantes are seen before the eyes; there is often a feeling of vertígo; the eyesight is usually somewhat impaired, sometimes very much so; and there are often twitchings of the muscles about the face. To this latter condition let me call special attention. If the albumen be abundant, and muscular twitchings appear while talking to the patient, I would emphasize the statement that the patient is on the very threshold of a crisis. Convulsions and coma may occur at any moment.

Get the patient to bed at once, if not there already. Allow nothing but the drinking of liquids, such as barley water, milk and hot water, very thin gruel, or simple water.

It is necessary to get both free action of the skin and bowels. For this purpose I would suggest as a single dose ten grains of calomel, thirty grains of nitrate of potassium, and put on this one drop of croton oil to carry all rapidly along. Put abundance of bedclothes on the patient, and warm irons or bottles around the body. The combination suggested above will act well on both skin and bowels, and no doubt the calomel carries away much of the uric acid that is so liable to cause convulsions when in the blood to excess.

My own opinion of pilocarpine is not very high in puerperal cases, as I have known convulsions come on speedily after the administration of this agent. This is likely due to the feeling of dyspnœa and suffocation experienced after its use; an irritation that is quite sufficient to cause the onset of convulsions, as the patient is in the condition ready for such an explosion. If pilocarpine is given, I would advise the use of a hypodermic injection of morphine about half an hour prior to the hypodermic injection of pilocarpine. This is a good course to pursue, as the morphine aids the action of the pilocarpine, and at the same time controls the tendency to convulsions.

By these means there will soon be free action of the skin and the bowels. The hard pulse will soon become soft. The poisons in the blood are soon washed out, as the free action of the skin and bowels induces great thirst; and the liquids already mentioned are drunk in large quantities, which still further dilute the poisons and help in their removal. The albumen in the urine lessens in amount rapidly, and the kidneys begin again to perform their regular functions.

There is one point on which I wish to be very emphatic. Your patient is in bed, or you give him orders to go there. Now, we know that in all those cases of renal anasarca the swelling about the head is most in the morning, after the recumbent position of the night, and on rising the patient has the greatest amount of headache. The explanation is clear. The hydræmic condition of the brain is increased by the recumbent position, and with this dropsy of the brain and meninges, there is a vast increase in the amount of poison acting on the nervous matter. Thus we have damage to it, both mechanically by pressure and toxically from the urea and uric acid, and perhaps other poisons.

Now, the point I mention is to see to the position of the patient. Elevate the head of the bedstead. The patient being in bed, I would say raise the head of the bedstead from one foot to eighteen inches. The effects of this position soon become apparent. The œdema about the head subsides, the hydræmia of the brain lessens, the pressure on the brain is reduced, and much of the poison in it is removed. By this means alone I have known persons with uræmic headache, albuminuria, cephalic œdema, and loss of sight greatly relieved. On the other hand, I have seen the crises of coma and convulsions ushered in by the patient assuming the recumbent position. The headache steadily increases, visual disturbances became hourly more marked, the swelling of the face persistently grows more, the hydræmia of the brain is exaggerated, and the toxic agents acting on the brain accumulate. All these conditions are benefited by the simple device of raising the head of the bedstead, as just indicated.

Having once acted on the bowels freely with the calomel, croton oil, and nitrate of potassium, continue to move the bowels freely by means of the Epsom salts, in the manner already stated, of giving it in satu-

rated solution, undiluted and often, so as to obtain free purgation.

By means of bedclothing and hot drinks free diaphoresis may be kept up for days, if necessary. To aid in this sweating process and the washing out of the blood the uric acid and urea, nothing will give such good results as the salicylates of sodium or potassium. The amount of diaphoresis obtained in this way, with a system loaded with liquids, is tremendous. This plan has the advantage that it not only washes out, but it also dissolves out the poison in the blood.

But suppose the condition is that of a pregnant woman, and you have the added condition of convulsions to deal with, as well as the albuminuria and coma. In this condition, first of all and at once, give a hypodermic injection of morphine, from ⅓ to ½ grain, and hold yourself ready to repeat it if needed. Then raise the head of the bedstead at least eighteen inches. Give then at least ten grains of calomel, with one or two drops of croton oil and thirty to sixty grains of nitrate of potassium. Cover the patient with abundance of clothing, and pack warm bottles or irons around her. When the convulsions have been controlled by the morphine, and the patient is well under its influence, then is the time to give, if you wish, the pilocarpine, in doses of from ⅙ to ½ grain, hypodermically. But I have already stated that I am not very partial to the action of pilocarpine, and by the proper use of other means there is fortunately not so much need for its use as a diaphoretic. Should, however, it be thought well to use it, I would recommend that it be always given a short time after the morphine, as in this way much of the unpleasant effects of the pilocarpine is obviated.

To obtain free and rapid sweating is most important in all those cases where there is much albumen in the urine and impairment in the action of the kidneys. A plan, which I suggested in the *American Journal of Obstetrics* some years ago, I would again mention. It is to wrap around the patient's waist a large piece of flannel wrung out of hot water, and then to put around the patient outside of this a piece of mackintosh or rubber cloth. In this way the patient is soon thrown into a very free perspiration, which can be easily maintained by plenty of clothing, hot drinks, and warm packs.

After the primary danger is over, maintain the free action of the bowels by means of the Epsom salts in saturated solution, the free action of the skin by salicylates, and keep the patient lying in the inclined position, with elevated head. This position may be maintained for one, two, or three weeks, as required, with great relief to the patient. In all those cases of uræmic headache, with swelling about the face and hands, I have come to attach a very great deal of importance to the position first described. As long as the patient is able to keep on her feet and go about, she escapes very frequently the severe symptoms of violent headache, coma, or convulsions. When labor comes on, however, and she is forced to assume the recumbent position, together with the fulness of the cephalic vessels that attends parturient efforts, the hydræmia and uræmia of the brain rapidly increase, and then the convulsions commence.

I would sum up the whole question thus:

1. In cases of albuminuria of moderate amount, give the saturated solution of magnesium sulphate.

2. If the case be more acute and urgent, put the patient in bed, with the head elevated.

3. If there be severe headache, any muscular twitchings, or tendency to coma, give at once a dose of calomel, croton oil, and nitrate of potassium, and then maintain the action of the bowels by means of the salts.

4. Induce free prescription by extra clothing, warm packs, hot drinks, and salicylates.

5. Allow no animal food but milk, and give liquids very freely.

6. If there be any convulsions, at once give a hypodermic injection of morphine, and follow it by the pilocarpine, if in the mean time sufficiently free diaphoresis has not been obtained.

7. In the case of pregnancy, if labor has not set in, and it is thought necessary to induce it prematurely, by all means push the above treatment vigorously, and try to obtain some considerable improvement in the patient's condition, especially in the kidneys, before the labor is induced. In some cases, by the above treatment, the kidneys speedily regain their proper functions, and it becomes unnecessary to interfere forcibly with the course of gestation. Should such a recourse be ultimately unavoidable, the patient is in a better condition to stand the additional strain.

8. In all cases of albuminuria, and especially in those of pregnancy, there is deficient action of the skin, as well as a marked reduction often in the quantity of urine passed per diem. To get the skin to act freely almost invariably increases the flow of urine. To

remove the hard, tense pulse, cause free perspiration, dissolve out of the system the excess of uric acid in it, due to the small urine flow, I would strongly advise the use of salicylate of potassium or sodium. A good deal has been said about these drugs irritating the kidneys. This, I think, is sometimes akin to the fear that too many have towards a quieting dose of opium in the sleeplessness often found in cases of albuminuria. The salicylates, I contend, neutralize the uric acidæmia, soften the pulse, permit, if they do not cause, free sweating, and carry from the blood a factor of great disturbance,—uric acid. It is not necessary to continue their use long, a few days at most will suffice, when the case may usually be safely left to the Epsom salts. With reference to opium, I have noticed the very hard, tense pulse of uræmia become soft and full in half an hour after the administration of the morphine hypodermically.

9. In five cases of uræmic convulsions, where I have had an opportunity of examining the urine, there was an excess of uric acid in the urine, and consequently an excess in the blood. The importance of this is very great, as uric acid in the blood in excess tends to cause convulsions.

264 College Street.

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## *ARSENIC IN PERNICIOUS ANÆMIA.*

By E. A. Barton, M.R.C.S., London, England.

THE following case, as illustrating the value of arsenic in pernicious anæmia, is not without interest:

J. A., a coachman, came to me on November 25. He then stated that he had always been a pale man, but for the last three months had been feeling very weak, and became quickly fatigued upon the smallest exertion. For the last two or three weeks he found that there was blood in the mouth on waking in the morning. The patient was tall, very thin, and intensely pale; the conjunctivæ were lemon-colored, the hands pearly white, and the ears looked transparently waxy. The gums were pallid, large, and very spongy, and at the junction of the teeth and gums a thin line of blood was visible. The tongue was clean and very pale, and the lips bloodless. There was no œdema of the ankles. Altogether he looked like a man who had recently suffered a severe hemorrhage. He was short-breathed, and felt faint when standing. The lungs were quite healthy. There was a soft systolic murmur over the cardiac area, probably anæmic in origin. A venous hum in the neck was most marked. The pulse was soft, of low tension, but not markedly accelerated. The urine contained one-sixth albumen, and was very pale in color. Three grains of the sulphate of iron was ordered thrice daily.

A fortnight afterwards I had the opportunity of making a careful examination of the blood. The corpuscles were found to be only eighteen per cent. of the normal number, while the hæmoglobin was twenty-three per cent. The corpuscles themselves were of various sizes, and formed rouleaux satisfactorily, but were soft and plastic. There was no leucocytosis. The blood appeared to the naked eye obviously pale and watery. The urine at this time contained the merest trace of albumen, which entirely disappeared in a day or two. On examination of the eyes it was found he could not read ordinary print, and that there were large hemorrhages into both retinæ, especially on the right side. The iron was discontinued, and liquor arsenicalis was ordered in 5-minim doses thrice daily. He was ordered to remain at home, and was allowed the most generous diet.

Four days after the commencement of the arsenic he had a fit, but when I arrived he had partially recovered, and was fairly sensible, with no paresis. He volunteered the statement that he now saw a red color when looking at the light.

A week after the commencement of the arsenic (which was never increased beyond 5 minims thrice daily) there was no further bleeding from the gums. He had complained for a fortnight of a beating noise in the head, "like a steam-engine." This (in all probability the beating of his own heart) ceased now to annoy him. The urine was normal but very pale. He was allowed to move about his room. His appetite was extraordinary, and, beside the most nutritious diet of strong soups, meat, etc., he took three to four pints of milk daily.

In three weeks he was able to walk half a mile without fatigue, and in a month returned to work. The corpuscles on January 16 (five weeks after the commencement of the arsenic) were seventy-six per cent. of the normal number, and the hæmoglobin sixty per cent. of the normal quantity. The hemorrhages into the retinæ had entirely disappeared, except for a slight blur on the right side. He could read small print and saw plainly. He con-

tinued the arsenic for another five weeks, and is now quite well.

*Remarks.*—The recoveries from pernicious anæmia are rare, and the diagnosis of the disease is usually equivalent to a death-warrant. In the case just cited the quantity of hæmoglobin and the number of corpuscles per centum were practically the same, showing that each corpuscle contained its proper amount of hæmoglobin. The disease, then, was one in which there was an extreme diminution in number of corpuscles. The hemorrhages into the retinæ, from the gums, and probably the kidney, gave a grave import to the disease, and the fit or convulsion was, I think, attributable solely to the profound anæmia. The rise in number of corpuscles, and the coincident rise in quantity of hæmoglobin, in one month, to thrice the amount under the administration of arsenic, proves the enormous benefit obtained from the drug.

35 Cheniston Gardens, Kensington, London.

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## *ON THE TREATMENT OF CHRONIC AFFECTIONS OF THE LARGE INTESTINE, AND IN PARTICULAR OF THE RECTUM, BY INTESTINAL ANTISEPSIS.*

By Professor Dujardin-Beaumetz, Paris, France.

FOR several years I have had occasion to observe numerous cases of chronic affections of the large intestine, and in particular of cancer of the rectum, which have been very much benefited by the employment of intestinal antisepsis; and these facts have seemed to me sufficiently interesting and instructive to be worthy of communication to the readers of the Therapeutic Gazette.

Of late years surgeons have proposed a series of operations of greater or less gravity to remedy the discomforts of cancer of the rectum; and thus excision of the bowel has been recommended by Verneuil, ablation of diseased portions by other surgeons, an operation which is rendered easy by resection of the sacrum. Our colleague, Routier, has cited some very interesting observations relative to facts of this kind.

I believe that, without calling in the help of surgery, one may obtain results almost as good by intestinal antisepsis. For three years past I have been treating patients manifestly affected with cancer of the rectum, one of these a patient that was referred to me by Dr. Dubuc, the other two cases were females suffering from the usual symptoms of the disease. In all these patients rectal examination, the discharge of ichorous material, and the symptoms of intestinal occlusion enabled me to affirm the existence of cancer. Nevertheless, I was able to obtain by means of vigorous antisepsis such an improvement that these patients have gained flesh, and are today in a comfortable state of health.

I believe, in fact, that a great many cases of cancer of the rectum resemble by their slow evolution certain uterine neoplasia, which may exist for years without compromising the life of the patient, and which only cause death by obliteration of the ureters and the grave consequences therefrom resulting. Moreover, in cancer of the rectum, whenever we can do away with the evils resulting in obstruction in fæcal matters, and prevent the dangers due to stercoræmia, we can maintain a general state of health sufficient to enable the patient to increase in weight and maintain a comfortable existence.

The means of which I avail myself are these: First, certain local means; second, antiseptic and purgative medicaments, introduced by the mouth; third, a vegetarian diet.

Under the first head, I counsel rectal irrigations. I make use of Cantani's enteroclyster, and I generally employ a Debove tube No. 2 furnished with a funnel, and I manipulate this siphon just as I do when I wash out the stomach. After having greased the tube, I introduce it as far as possible into the rectum, with the patient in a horizontal position; and, having filled the funnel with a quart or more of the solution, elevate it, and allow the contents to flow into the intestine. An ordinary fountain syringe, such as is used for vaginal injections, answers very well, with the addition of a curved rectal canula.

I employ a solution of naphthol,—the most soluble and the least toxic of the naphthols,—and the strength of the preparation is about four grains to the quart of water.

I generally introduce from a quart to a quart and a half, or even two quarts, of this solution. It is not necessary that the patient should retain these injections, but he may let them pass almost immediately.

As for medicaments introduced by the mouth, I make use of antiseptics and purgatives. Among the antiseptics, I recommend particularly salol, which, as I have before told you, I regard as the best of intestinal anti-

septics, and ordinarily I employ the following formula:

℞ Salol,
Salicylate of bismuth,
Bicarbonate of sodium, āā 10 grammes (150 grs.). M.
Divide into thirty powders.
S.—One powder before breakfast and dinner.

The proportion of these ingredients may be varied *ad libitum*. Thus the quantity of salol may be increased to three or four grammes a day.

I insist, moreover, in keeping up free action of the bowels, and this is, doubtless, the difficult part, for, despite all the care you may take, there is always tendency to loading of the intestines, and every four or five days the patients will have colics and a profuse diarrhœal discharge. The preparations which I ordinarily use are the purgative mineral waters, the laxative powders, or cascara sagrada or cascarine. The laxative should be such as is best tolerated by the stomach. It is necessary that the patient should have one stool at least every day.

Lastly, as auxiliary and complementary to this treatment, I order a vegetable diet. I need say but little as to the details of this dietetic regimen, of which I have several times spoken at these conferences. Patients should be nourished exclusively on milk, eggs, cereals, fresh vegetables, and fruits; this is the regimen which reduces to the minimum the alimentary toxines (see the lecture on "Vegetarianism," in the THERAPEUTIC GAZETTE, March, 1890).

Such are the great lines of treatment which I have adopted in cases of cancer of the rectum. Can we expect to benefit all cases as much as those which have been the subject of my recent observations? I do not think so. At the same time, whenever the cancer does not cause very much intestinal constriction, and it is possible to obtain a sufficient clearance of the bowel, I believe that we can obtain quite satisfactory results from the means which I have indicated.

But this same method of treatment is just as applicable to other affections besides cancer of the rectum, and I have had good success in the treatment of chronic inflammations of the large intestines, and in particular in glairy and pseudo-membranous colitis.

We know how frequent this glairy colitis occurs in certain patients, and particularly in females. I may here mention that I often replace my naphthol lavements by lavements of tincture of iodine, in the proportion of 10 grammes of the tincture to a quart of water. I continue, at the same time, my powders of salol, my laxatives, if the patient is constipated, and the vegetable diet.

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## *NIHILISM IN MEDICINE.**

BY CLARENCE L. DODGE, M.D., KINGSTON, N. Y.

NIHILISM in therapeutics would perhaps be a more appropriate title for this paper, as it is in this branch of the science of medicine that the "do nothing" policy is noticeable.

Under such designations as "conservative medicine," "expectant treatment," "symptomatic treatment," etc., a system of practice has been inculcated of late years which has been indirectly, at least, productive of harm.

One of the results of Hahnemann's teachings—since he practically gave his patients no medicine whatever—was to prove to the medical profession that many acute diseases tended intrinsically to recovery if simply let alone. This was previously thought to be impossible, hence faith in drugs was somewhat shaken, and, as is always the case, extremists arose who professed to believe that drugs have no power over disease, and all that was necessary was to leave everything to Nature,—the so called Vienna school of therapeutic nihilists, whose favorite motto was *Medicus Naturæ minister non magister est.*

In this country Boston claims the honor of being the birthplace of the reformation in medicine. Our New England brethren are fond of dating a new order of medical ideas from the publication of an address by Dr. Jacob Bigelow, "On Self-Limited Diseases," in 1835.

Before proceeding any further, I wish to disclaim any attempt at belittling the importance of this discovery *per se*. It is the evil results that it has led to that I deplore, and which, I think, should be remedied, and I will now endeavor to give the reasons for the faith that is in me.

A witty Frenchman once said that cases of disease to be truly satisfactory must end fatally, because autopsies are essential in order to verify the diagnosis. This heartless jest would serve me well for a text if I were able to do justice to the theme.

A few years ago diagnosis was the all-absorbing subject at a medical clinic; the

* An address delivered before the Ulster County Medical Society by the retiring president, June 2, 1891.

treatment was usually summed up in a few words. The average student would esteem it a far greater honor to be able to verify his diagnosis by an autopsy than to cure his patient with medicine. The one was capable of demonstration, therefore scientific; the other was open to doubt,—that is, so far as the relation of cause and effect was concerned,—and therefore empirical.

Many of our standard works on practice are open to the same criticism. Take "Flint's Practice," for example. This work has probably enjoyed the largest sale of any modern text-book in this country. While not assuming to pose as a critic of so able and accomplished a physician as the late Dr. Flint, yet I cannot forbear calling attention at this time to what I regard as an inherent weakness and serious defect in a text-book for students and young practitioners, and that is the nihilistic tone of his therapeutics. In a work of over one thousand pages there is not a single concrete prescription. While this would not have made the work any less desirable for the oldest practitioner, it would have been very much more useful for the younger reader. He rarely expresses a decided preference where several remedies are mentioned, and the young physician is left to his own judgment—which is often a minus quantity—to make a selection.

This constant contrasting of Nature with Art, to the disparagement of the latter, while made with the best intentions, has a bad effect on young practitioners. This iteration and reiteration that "there are no specifics," that "all diseases are self-limited, or, from the very nature of things, necessarily fatal," that "expectant treatment is the only scientific method," that "we must be very careful not to do any harm if we don't do any good,"—these admonitions, I say, constantly repeated by those who speak with authority, have the effect in time of making nihilists, therapeutic nihilists, of our young men. How can it be otherwise. A young practitioner, with little experience, reads in his journals of Sir William Gull and his mint-water treatment of acute rheumatism. Result, cure; or, at any rate, patient gets well in about the same length of time, it is claimed, as with rational treatment. Then he hears of a man in his own neighborhood cured of acute rheumatism by taking one ten-millionth of a drop of chamomile every four hours, in the short space of six weeks. He stops and thinks, and asks himself the question, Is medicine a science? Do drugs cure disease? And the next case of rheumatism he has he feels strongly tempted to invoke Nature and rely upon "expectant treatment." Bad luck to the patient. Lest the above may be thought flippant and exaggerated in tone, I submit the following quotation from Dr. Flint: "We hear now oftener of diseases managed with little or *no* medication than of cases illustrating the abuse of remedies."

While I am far from wishing to depreciate the importance of pathology or diagnosis, I earnestly desire to make a plea for therapeutics. As Oliver Wendell Holmes says, "The solemn scepticism of science has replaced the sneering doubts of witty philosophers. The more positive knowledge we gain, the more we incline to question all that has been received without absolute proof, . . . and some of those who have become medical infidels pass over to the mystic band of believers in the fancied miracles of homœopathy." If I may be allowed to indulge in metaphor, I would say that pathology is the Torch that lights the way, diagnosis is the Portal through which therapeutics, the Healer, may enter to relieve and restore. The prominent therapeutists of this country can be numbered on the fingers of one hand, while every medical college from the University of "Confederate X-Roads" to Harvard, advertises its special courses in physical diagnosis and pathological anatomy. The good old-fashioned method of reading medicine with a preceptor for a year or two before entering college offered about the only practical way of studying therapeutics. This is being gradually abandoned, to the great detriment of the medical student.

The recent graduate, owing to modern methods of teaching, is very apt to place diagnosis first, pathology second, and therapeutics third, since he has been taught to believe that Nature performs the cure in most cases, and he is content to be able to indicate the pathological condition and make a positive diagnosis. Whether admitted or not, this is a condition of affairs that exists to a degree that would surprise many clinicians were it possible to demonstrate its extent.

While I yield to no man in my admiration and respect for original investigators in etiology and pathology, I would like to ask, Which has been the greatest boon to mankind, the discovery of anæsthetics by Morton or the publication of his "Cellular Pathology" by Virchow? Contrast the benefits to the poor epileptic from the therapeutic application of the bromides to this fearful malady

with the pathological dissertations that have been written by the hundred on epilepsy. Have not antipyrin and phenacetin been of far more service to suffering humanity thus far than the announcement that the gonococcus is the etiological factor in the production of specific urethritis? Who would not prefer to be the discoverer of a specific for diphtheria than to be the one to absolutely demonstrate the microbe that causes it? While it is freely conceded that "therapeutic skill requires the practitioner to be a skilful diagnostician," yet a lack of faith in therapeutic measures will handicap the ablest diagnostician in his attempts to cure disease. While from a purely scientific point of view it is very pleasant to indulge in utopian visions of the future, when "medical practice shall become something higher in the estimation of the public than the administration of drugs, and the idea of the doctor will be less inseparably associated than heretofore with the lancet and the pill-box," yet as a matter of fact, until human nature shall be constituted very differently from what it now is, these dreams will not be realized. To state the matter plainly, when a man is sick and sends for a physician, he does so to obtain relief, and naturally expects his medical attendant to make some attempt at least to relieve him; in short, he expects him "to do something."

It is unnecessary to remind the members of this Society that it frequently happens that it is impossible to restore the patient to health, but it does not follow that he may not be made more comfortable. I hold that no form of sickness is ever encountered where something may not be done to render the patient less miserable; but where a practitioner sees only a pathological condition beyond the reach of remedies, or, on the other hand, discovers nothing abnormal by physical exploration, and dismisses the one as incurable and the other as requiring nothing further than "attention to hygiene," with the assurance that "nature will do the rest," he will be apt to find in a short time that his efforts are not appreciated.

Lionel S. Beale, the distinguished Professor of Practice at King's College, London, writes* as follows: "It must be admitted that in former days many doctors gave too much physic and were somewhat too fussy. In these days, however, I fear there is a tendency, or more than a tendency, to err in an opposite direction. Some practitioners, having convinced themselves, seem to be most anxious to convince the public and the profession that the chief duty of a medical adviser is to study, note, and carefully watch the progress of a malady; to observe, if he is qualified to do so, the minute changes taking place in the tissues of the sick man, in order that he may discover facts which will increase our knowledge of the nature of the pathological processes, and possibly lead to the enunciation of new principles of treatment for the benefit of sufferers in the next and succeeding generations. But this view of medical aspiration is not always appreciated by the patient, . . . and it will be found that there are some few patients so peculiar in their notions as to object to their bodies being used for observation, or their sufferings studied and noted as interesting pathological phenomena, which may be further elucidated as the case proceeds. You must really bear in mind that patients want to be relieved as well as watched, and unless you can be of some use to them, unless you can advise and help them, they may regard you as a nuisance, instead of discovering in you a consolation. . . . I have sometimes ventured to discuss with a medical friend the actual nature and import of the symptoms from which he was suffering, but I generally find that my friend is sadly disappointed if I do not propose to do something for him, or suggest some operation to relieve him."

Before bringing this brief and imperfect article to a close, I wish to correct any misapprehension as to my position. I believe in the *vis medicatrix naturæ*. I believe in the so-called self-limited character of many acute diseases, and that it is impossible to abort their course. Neither do I advocate the so-called "heroic" treatment; modern therapeutics is a vastly different thing from the drugging and dosing of a former age. The elegant and diminutive granule of aloin, containing one eighth or one-fourth of a grain, is now substituted for the nauseous draught of elixir pro of a generation ago, and the hypodermic injection of morphine takes the place of the enema of starch-water and laudanum of our father's time.

Some sceptic may ask, What need of physicians if Nature can do so much and Art can do so little? I will answer this question in the language of H. C. Wood, who illustrates their use in acute complaints thus: "The captain of a fast-flying ocean steamer sees in the distance over the tranquil blue water a

* "Slight Ailments," p. 218.

small cloud the size of a man's hand, the mercury is falling in the barometer, and his practised eye tells him that a cyclone is approaching. He cannot escape that storm, he cannot stay its course, but he makes taut the ship, reefs the sails, and stands ready for the blow. So with the physician. His mission is to guide his patient's course through the dangers of his sickness. He studies the ways in which the disease approaches, the methods by which it kills, and the injuries which it is apt to leave. Typhoid fever kills by exhaustion, by high fever, by diarrhœa, by lack of digestive power due to extensive ulceration. Hence here are the danger-notes for the physician. At once he puts the typhoid patient to bed, to save that strength, the last grain of which may just be sufficient to hold together the bridge which is to carry the sick man over a yawning grave. He keeps the temperature down, within safe limits, for fever burns out the vital fires most quickly in this dread trouble. He secures rest at night for the sick man, to prevent the exhausting vigils in the long hours that follow midnight. In every way the leaks are stopped which are carrying off the life blood."

And now abideth pathology, diagnosis, therapeutics, these three; but the greatest of these is therapeutics.

129 Clinton Avenue.

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*BORIC ACID IN CHRONIC CONSTIPATION.*

The cases suitable for this form of treatment, which has been recommended by Flatau (*Berlin. Klin. Woch.*, No. 9, 1891), are those in which, on account of negligence or sedentary habits, a condition of habitual constipation is set up with its usual consequences in the lower bowels. Thus we have frequent hemorrhoids and catarrh of the rectum, while symptoms localized higher up, such as eructations, are met with,—a feeling of pressure or fulness, possibly ascribed to the stomach. The removal of constipation is often sufficient to lead to the disappearance of complaints from the side of the nervous system, such as depression of spirits, peevishness, and general grumbling, which are associated with a confined habit of body, and the explanation of which is not quite clear. While warmly praising treatment by massage, carried out by skilled hands, Flatau recommends in cases where there is a laxity of the rectal mucous membrane, causing part of it to be present at the anal opening, that it should be carefully washed with cold water and dried, after which powdered boric acid is well sprinkled over or rubbed in. In cases where there is torpor of the colon, and the mucous membrane cannot be treated in this way, the powder should be insufflated. This can be carried out by an insufflator with a short wide tube introduced into the rectum, and carrying about three fourths of a teaspoonful for use at one time. After the use of so simple a proceeding fairly well-marked peristaltic movements may be observed in the colon, and copious motions passed. Three or four evacuations daily have been passed during the first days of use. The patient should be encouraged to attend to all calls to stool, and avoid suppressing even the slightest indications of intestinal peristalsis.—*Medical Chronicle*, July, 1891.

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*A NEW METHOD OF DRESSING THE CHEST IN PNEUMONIA, PLEURISY, ETC.*

Dr. William Hunt, of Philadelphia, advises the following dressing:

If there is to be any cupping or other preliminary operation, have that attended to; then all the ingredients wanting are pure collodion and absorbent cotton in smooth layers, and a good broad brush, like a mucilage brush.

Apply a very thin layer over the side affected, from spinal column to sternum, and secure it with collodion smeared thoroughly over it. Then go on with thicker layers, securing them with collodion, until a good padding is obtained, paying particular attention to the edges. In double cases you can act accordingly. The advantages are—

1. One dressing, if well applied, will last throughout the case.

2. Fatigue and discomfort of frequent poulticing are avoided.

3. The side in single cases is held as in a splint, while the free side does the breathing. A first-class non-conductor is covering the chest. It is quite probable that the contracting collodion may have some influence in controlling the blood-supply.

4. There is no particular interference, in one who has a good ear, with physical examination.—*International Journal of Surgery*, June, 1891.

# The Therapeutic Gazette

EDITED BY
ROBERT MEADE SMITH, A.M., M.D.,
Professor of Comparative Physiology, University of Pennsylvania,
PHILADELPHIA.

GEO. S. DAVIS,
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## Leading Articles.

### *SOME NEW COMBINATIONS OF SOZOIODOL.*

IN sozoiodol is found a combination of two drugs of the most marked activity,—iodine and carbolic acid,—together with sulphur. When first introduced in the treatment of skin-diseases it gave little satisfaction, on account of its irritating properties, but subsequently, when freed from its impurities, found to be most satisfactory as a parasiticide. It was found that this substance, whether employed in the form of pills or powders, as pointed out by Dr. Lassar (THERAPEUTIC GAZETTE, January, 1888), was well borne by the diseased skin, and a recommendation was given for its employment in combination with various other preparations, such as zinc, starch, vaseline, or lanolin. In parasitic hair-diseases it was especially efficacious when employed in a ten per cent. form. Other well-known iodine derivatives of carbolic acid, such as iodophenol, iodonaphthol, etc., on account of their intense iodine odor and irritating properties, have proved but little available for external employment. The sulphonic acids of the phenol class, when presented in the form of iodine compounds, are, on the other hand, much more suitable for therapeutic employment, for, as is well known, carbosulphonic acid is a non-poisonous agent. Sozoiodol is then a derivative of this class, in which the sulphuric acid substitutes carbolic acid, and in which the iodine forms an entirely new atomic grouping. It contains more than fifty-two per cent. of iodine, and, instead of the poisonous power of the carbolic acid found in carbo-sulphonic acid to the amount of twenty per cent., it is non-poisonous and is equally antiseptic. Langaard, in 1888 (*Therapeutische Monatshefte*, September, 1888), found that sozoiodol, in two per cent. solution, is a free acid, which, as sozoiodolate of sodium, entirely prevented the development of micrococci, and was an active agent in the prevention of putrefaction. Since, as already stated, this compound seems to be free from all toxic properties, it is evident, then, that in this substance we have a valuable antiseptic agent. As to the element in this compound to which the antiseptic properties are attributable but little can yet be finally said, but this is a matter of little importance, provided its clinical value be established. Sozoiodol is completely odorless, and therefore much to be preferred on this account to iodoform, to which in other respects it is closely comparable. It is readily soluble in water and glycerin, does not decompose through the action of light, is readily combined with other remedial substances, and is capable of the widest application. Of the various combinations of sozoiodol with other bases, we would call attention among the metallic salts to combinations with zinc, lithium, and mercury, and sodium and potassium salts, as described in the *Pharmaceutische Post* for August 9, 1891, by Dr. Schwimmer. The author's experiments with the zinc compound of sozoiodol were mainly confined to the treatment of acute and chronic gonorrhœa. He employed in acute forms of gonorrhœa a half to one and a half solution of the sozoiodolate of zinc in distilled water with two and a half per cent. of laudanum; while in the chronic forms he substituted one per cent. of salicylate of bismuth for the laudanum, the percentage of the latter depending upon the irritability and degree of pain experienced. He states that in all cases of acute gonorrhœa where the inflammatory stage was commencing to decline,—that is, from the fifth to the seventh day of the disease,—he employed this injection three to four times daily,

and found that reduction in the secretion and in pain were rapidly produced, the effects being prompter and more satisfactory than followed any of the other zinc preparations. In the early stages he recommends the use of a one and a half per cent. solution. The sodium and potassium compounds of sozoiodol were employed either in the form of powder or of salves in various forms of syphilitic ulcers, in burns, ulcerated and contused wounds; also in the treatment of buboes after incision his results were more satisfactory with this preparation than with iodoform. He employed for this purpose the sozoiodol salt of sodium with five to ten times its weight of lycopodium powder, or in the form of an ointment, 10 parts each of lanolin and liquid paraffin to 2 of the double salt. The price of this remedy is said to be somewhat higher than that of iodoform, but yet its freedom from odor and apparently greater efficaciousness would seem to counterbalance this disadvantage.

In vesical affections Dr. Schwimmer employed a one per cent. solution for washing out this organ, and it seemed to be quite as efficacious in this mode of application as a three per cent. borax solution or a one per cent. resorcin solution. So also in ozæna, he states, its effects are satisfactory. The sodium salt when in solutions of moderate strength must be kept in the dark, since it is decomposed through the action of light, the iodine is liberated, and the solution acquires irritating powers. The mercurial salt, as would naturally be expected, was mainly employed in the treatment of various forms of syphilitic ulcers, 1 part of the mercury combination being mixed with 10 to 20 parts of powdered starch, or 1 part of the mercury salt with 20 of vaseline, to form an ointment. In twenty per cent. preparations the remedy is stated first to act as a tolerably severe irritant, so that the author advised that its employment be commenced with the use of a five per cent. preparation. Dr. Schwimmer is especially eulogistic of this preparation, and says that it exceeds in value any mercurial with which he is acquainted, even being suitable for subcutaneous injections, for which purpose he combines it with a small amount of potassium iodide. His cases in which he employed the mercurial salt as an antisyphilitic amounted to two hundred and thirty in number, and he maintains that in none of these cases were any of the difficulties or disadvantages which attend the subcutaneous use of other mercurials met with, and while its great solubility renders its subcutaneous employment free from the disadvantage, dangers, and drawbacks attendant upon the subcutaneous deposit of an insoluble material, its favorable effects are said to be quite equal to those of the least soluble mercurial preparations.

Dr. Schwimmer's experience, he states, has taught him that one injection each week is quite equal in its effect to three mercurial inunctions as ordinarily employed, and that, therefore, five to six injections correspond to about thirty days' constant employment of the inunction cure. Of course the subcutaneous injection of this, as of any other solution, must produce some slight pain; but the infiltration is extremely moderate, and in no case was sufficient to prevent the further continuation of the treatment. The injection was always made in the gluteal region, first in the right and then in the left side, employing doses of 1½ grains. The greater solubility of this preparation entails a correspondingly rapid absorption, and there is, therefore, a possibility of more or less tenderness of the gums, which may perhaps reach such a degree as to necessitate suspension of the treatment. This, however, may of course be largely prevented by ordinary precautions. In no case did he have any abscess formation, although, he writes, that he employed the remedy subcutaneously over twelve hundred times.

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### *THE INSOMNIA OF CONTINUED FEVERS AND ITS TREATMENT.*

IN typhus and typhoid fever, sleeplessness is a frequent, troublesome, and often dangerous symptom. Dr. Murchison, writing of the necessity of sleep in typhus, says, "The practitioner cannot be too forcibly impressed with the fact that loss of sleep at any stage of typhus, if it continue for two or three nights, is of itself sufficient to kill."

In typhoid the necessity of sleep is no less urgent. One of the first symptoms of approaching dissolution is a restlessness which forbids sleep, and the return of refreshing sleep is hailed by physician and attendants as a presage of recovery.

In the earlier stages of these fevers, insomnia is pretty certain to accompany the hyperthermia, while sleep often attends a fall in the temperature. It would seem that overheated blood is itself inimical to sleep by exciting the cerebrum. Certain it is that cold bathing—the cold or tepid bath—and antipyretics that bring down the fever quiet the

nervous disturbances and promote sleep. Hence, for the restlessness and insomnia of typhus and typhoid fevers, there is often no better treatment than a cold bath of about fifteen minutes' duration, the temperature of the water being from 60° to 75° F., and during the bath cold water may be poured on the head in cases of extreme pyrexia with restlessness and delirium. While fifteen minutes ought to be long enough to depress the febrile heat to nearly the normal, in some cases the bath may be of longer duration. "The earlier the stage, the higher the fever, the more robust the constitution, the colder should the water be. The later the stage, the weaker the constitution, the more affected the nervous system, the warmer should be the water."*

Some writers claim to have found cold sponging and the wet-pack a sufficient substitute for the cold bath. Others have derived only a temporary refreshing from these milder means.

Where the cold bath is impracticable, from difficulties on the part of the patient or his surroundings, some one of the new antipyretics may be tried. There is much testimony in favor of acetanilid as a nervous sedative in fevers. 5 grains every hour for three or four doses (in an adult) will generally lower the febrile temperature two or three degrees, and one or two hours of quiet sleep (especially if the medicine be given in the night-time) is almost certain to follow. By many practitioners and hospital physicians, antipyrin is regarded as the preferable hypnotic; the dose should be double that of acetanilid.

These antipyretics, though they undoubtedly have a marked action on the thermogenetic and thermotaxic heat-centres, which are under abnormal irritation by the fever-poison, an action which is extended to the higher cerebral centres, certainly do not affect the infectious agent, and hence the course of the fever is not influenced by them. Their prolonged use is probably attended by some cardiac depression (an evil to be especially shunned in fevers), and the best clinical authorities are shy of them, seeing no permanent advantage in the continued administration of these medicaments, but possible mischief. At the most, their employment is restricted to the obtention of such sedation as is needed for the nervous disturbances.

Among the pure hypnotics, chloral still deservedly takes the lead in the treatment of the insomnia of fevers. It calms the delirium, saves the forces, moderates the fever, and produces a sleep strikingly like natural sleep in its refreshing effects (Liebreich, Nothnagel, Flint, Russell, Dujardin-Beaumetz). The only contraindication is cardiac weakness. In the later stages of typhus and typhoid it is better to avoid chloral, substituting opium or morphine, and in the earlier stages, where there is much jactitation and delirium, and especially when diarrhœa is a prominent symptom, 20 drops at bedtime of the deodorized tincture of opium in a little camphor-water is a useful adjunct to other measures intended to subdue restlessness and produce sleep.

With regard to sulphonal, we think that experience has proved this hypnotic to be of little utility in the obstinate insomnia of fevers, and the same may be said of chloralamid and other of the more recent hypnotics. Paraldehyde, were the taste not so objectionable, might render considerable service in the delirious insomnia of typhus.

Alcoholic stimulants judiciously administered sustain the heart and circulation, promote the nutrition and restoration of the nervous system, and thus come under the head of remedies useful to combat insomnia. Given in too large or too frequent doses, they undoubtedly defeat the end for which they are given, and aggravate existing nervous disturbances. There is another reservation,—they must be cautiously prescribed where there is renal insufficiency.

Stokes, in his lectures, speaks of the well-marked calming and sedative effect of wine in fever. "A patient who has been restless, sleepless, and delirious will sometimes become quiet and fall asleep after the administration of a little wine. This occurs where the nervous symptoms are probably due to an anæmic or spanæmic condition of the brain associated with a weak heart and a flagging circulation."†

Febrile insomnia is essentially a toxic insomnia; this has been made apparent by the investigations of the last few years. Whether it be the microbes or their ptomaïnes, or both, which excite the cerebrum and derange the nervous functions, has not been yet positively determined. Uræmia probably enters as an important factor; in the active stages of fevers, and in the declining stages when the circulation is oppressed and languid, and

* J. C. Wilson.

† "Lectures on Fever," Lea Brothers & Co., 1876.

the prognosis is grave, elimination by the kidneys is always imperfect. Hence an important part of the treatment should be to promote the excretion of the poison and the removal of effete matters. Unfortunately, this indication can be but imperfectly met. All that can be done is by suitable nutrients and stimulants to sustain the organic forces in their struggle with the foe, and to favor elimination by the kidneys and other emunctories. The various diluents (lemonade, barley-water, effervescent drinks, plain water, etc.) which are so freely given, because so constantly craved, promote excretion by the kidneys. Milk is often prescribed *ad libitum* as the sole drink and nourishment; its diuretic properties are well known. Some clinical authorities are in the habit of ordering mild diuretic mixtures (solutions of nitrate of potassium, of sweet spirits of nitre, with sometimes the addition for several successive days of a little digitalis) all through the fever, and claim good results.

The bowels should be kept open, suitable mild laxatives being given if there be constipation, and frequent cold or tepid ablutions, followed by brisk rubbing, will do something towards promoting the functions of the skin.

We have hinted at anæmia and spanæmia as being part causes of the insomnia of continued fevers. Emphasize as we may the poisoned condition of the blood and the abnormities of the circulation, the fundamental factor in the insomnia, headache, jactitation, delirium, and hebetude of continued fever is malnutrition of the highest nerve-centres, and against this our therapeutic resources are meagre. The necessity of nourishment is apparent; but little food, however, can be assimilated; and, in the absence of any specific medication (for which the profession is looking), the best that can be done is judiciously to combat dangerous symptoms. The insomnia is the measure of the cerebral disturbance, and, if this can be successfully overcome, one important obstacle at least in the way of recovery is removed.

## Reports on Therapeutic Progress.

### *PROFESSOR LANNELONGUE'S TREATMENT OF TUBERCULOSIS.*

Undoubtedly, since the reading of Professor Koch's celebrated paper at the last meeting of the International Medical Congress in Berlin, the most important contribution to the study of the treatment of tubercular disease was that made by PROFESSOR LANNELONGUE to the Academy of Sciences and to the Academy of Medicine. The reading of the paper had been looked forward to for some time, as it was noised abroad that M. Lannelongue was actively engaged in confirming a series of encouraging observations which had led to some very remarkable results. Consequently the lecture-hall of the Academy was filled by a distinguished scientific and appreciative audience, which listened attentively while the author, calmly and clearly, and with admirable scientific reserve, made his some-time-anticipated communication. According to the Paris correspondent of the *Lancet* (July 11), who reports this lecture in detail, he began by saying that it was now four months since he made the first trial of his method of combating tubercular mischief in the human subject, and that during this time he had applied it to examples of the various stages of tubercular evolutions, from the earliest to the most advanced forms. The results obtained and controlled by the most careful observations appeared to him worthy of being made public without further delay, in order that they might be submitted to the test and judgment of all. And this for two reasons,—first, because of the urgent importance of the subject itself; and, secondly, because the simplicity of the method, as well as its prompt action, will enable every practitioner to appreciate its value. Moreover, it is not a question of a specific remedy, acting directly on and destroying the bacillus, but of a well-known chemical and antiseptic agent, applied in a method the details of which are to follow,—viz., chloride of zinc.

The lesion produced by the bacillus of tubercle being nearly always localized to one place in the organism, it seems reasonable to suppose that the best results would be obtained from remedies applied to the affected area, and that nature's work of repair would be imitated in every respect if one could bring about a transformation into fibrous tissue—a tissue representing cicatrization, or the natural reparative processes—of the morbid elements which are mostly destined to degenerate, and to become, in the great majority of cases, foci of infection, first for the neighboring parts, next for those more remote, and finally for the whole economy. In brief, the object aimed at by the method is to bring about a sclerosis of the tubercular tissue wherever may be its seat. In effecting this, a condition is brought about which is in-

compatible with the existence of the bacillus, since this latter is found to disappear, or at least to become powerless for evil, when the condition in question is established. The method itself consists simply in conveying the appropriate therapeutic agent, not into the fungous growths, nor into the actual tubercular foci, but outside and around them only. The anatomical structure and the manner of increase of these foci show the advantage of this precaution; for while at the periphery are found in full activity the most recent processes, in the centre there is nothing but degenerated products, which goes to show that the bacillary action always spreads eccentrically, and that the normal tissues forming the limit of the morbid centre are as a matrix continually elaborating under bacillary stimulus these tubercular neoplasms, which then propagate and spread, invading all before them. Hence the necessity for modifying as early as possible the peripheral tissues, as well as for attempting to alter the area already invaded, where the bacillus is in full activity; for it must not be forgotten that the latter zone is dependent for its blood-supply —in other words, for its nutrition—on the peripheral zone.

Now, experiments have shown that chloride of zinc produces a remarkable fibroid change in the normal tissues of animals, and, as might be expected, the same fibroid transformation is brought about by the same agent in morbid tissues in general, including the tubercular. This chemical compound may be said to fix the anatomical elements by killing them, for it obliterates the capillaries and smaller vessels around where it has been deposited. An inflammatory action is thus set up in the vascular walls, which narrows the calibre of the surrounding vessels for a considerable distance from the initial point. But over and above this another local change of the highest import is brought about. Very rapidly—even within a few hours—there is produced in the altered tissues, by transmigration, and probably also by cell proliferation, an enormous afflux of new anatomical elements. These young cells cause fresh œdema of the periphery of the granulation growths, and infiltrate the tubercular neoplasm to the fullest extent. From this moment the struggle sets in between the accumulated elements and the bacilli, especially between the migratory cells and the microbes, to the detriment of the latter. However it may be as to the strife between cell and bacillus, the elements of the morbid growth which the chloride of zinc had destroyed are reabsorbed slowly, and finally disappear. The young cells, on the contrary, organize with great activity, and form a firm fibrous tissue, which is met with in appreciable quantity as early as the day next after the injection.

Following the sclerosis in articular fungosities, there is produced a thickening and subsequent condensation of osseous tissue if the periosteum be involved in the reparative process, as was the case in the examples of osteo-arthritic disease cited by the author. The remote results, so far as it is yet possible to judge, show a marked tendency for the sclerosed elements to be replaced by a more pliable connective tissue. As a consequence, the diseased parts regain their suppleness and their form, while locomotor functions are preserved entirely, or at least to the limits present at the beginning of the treatment. So far twenty-two patients had submitted to the treatment, including two cases of pulmonary tuberculosis. As to these latter, however, nothing could yet be said, for the injections were begun on June 23 only. The other twenty were all cases of surgical tuberculosis, which M. Lannelongue classifies into—first, *non-suppurating and not open*, eleven cases, including six cases of tubercular knee-joint disease. Of these six cases, two have been up and about for a month past. They walk with all the functions and even the form of the joint well preserved. Another treated more recently is getting up. Of the remaining three, one is about to walk, the other two being under treatment since June 13 only, but they are progressing satisfactorily. An elbow-joint case and an ankle-joint case are both cured, the former preserving all the natural movements. His second group, *suppurating and not open*, consists of seven cases, including four joint cases, two of the knee, which are almost cured, and two of the ankle, doing well. The third group, *suppurating and open*, consists of two cases of advanced and suppurating osteo-arthritis of the ankle-joint, in one of which it was a question of amputation, but both are now doing well. Such, continued M. Lannelongue, being the results accruing from a somewhat limited operation, the question of permanent cure presents itself. Taking the cases of knee-joint disease for example, may not they be considered cured who have regained the complete functions and even the form of their joints, who feel nothing abnormal, who walk all day, are gaining in strength and weight, and who, in short, for more than a month past

have led their ordinary lives? But notwithstanding all these facts and appearances, one cannot be too cautious in coming to a conclusion.

Permanent cure involves the undoubted disappearance of the bacillus; but this disappearance M. Lannelongue was not absolutely able to affirm. It is true that in a tuberculous specimen which was taken from one of the patients after the sclerotic change had been induced, no trace of a bacillus could be detected, and that a guinea-pig which was inoculated with a preparation from this same specimen two months ago is still alive and well. There was still in some of his cases the question of wrong diagnosis, and he was willing rather to accept the responsibility of an inexact diagnosis than to advance too fast. But however this might be, there was every reason to believe that the transformation of tubercular tissue into fibrous tissue was little compatible with the life of a bacillus, and there could be no manner of doubt that among some of his patients the bacillus of tubercle showed for nearly three months no evidence of its presence. The constitution of the new tissue would in any case lessen the chances of general infection, for it has for a long while been recognized that tubercular foci which are softened and full of liquid are much more dangerous, not only to the neighboring parts, but to the entire economy. If, then, the bacillus persists in the sclerosed tissues, a point which M. Lannelongue was trying to resolve experimentally while waiting the proofs to be drawn from the examination of further microscopic preparations, it would appear to be confined in an encapsuled and therefore harmless condition, all traces of its activity having disappeared for a time, the length of which was increasing day by day. The near future would, however, alone definitely settle this point.

In commenting editorially on the above communication, the *Lancet*, on July 18, especially calls attention to the fact that the treatment of tubercular diseases brought under the notice of the Paris Academy by M. Lannelongue, is essentially based on the simple fact that fibrous induration is to be regarded as the natural curative process of tubercular change. It having been found that chloride of zinc is peculiarly apt to excite such sclerotic processes, when administered in sufficiently small quantity (2 or 3 drops of a ten per cent. solution) so as to obviate its more powerful escharotic action, this substance has been employed, and has yielded very satisfactory results in external tuberculosis, and its application in the case of pulmonary tubercle is, according to M. Lannelongue, equally encouraging. As an illustration of the changes effected by injections of this salt into tubercular tissues may be cited the case of a child suffering from caseous glands, many of which had become fused into one mass. These were treated by the injections, and after a few days, suppuration commencing, the glands were extirpated. Opportunity was thus afforded for comparing histologically those glands which had been injected and those which had been left alone. In each case there was caseous material surrounded by a zone of tubercular tissue within a fibrous sheath; but in the former glands the whole substance was dense and fibrous, and very firmly adherent to the investing layer. It would appear that the tubercular formation itself is less influenced by the agent (which has no specific property, and is therefore not in the least comparable to Professor Koch's tuberculin) than are the healthy tissues that surround the tubercles. The aim of M. Lannelongue's method is, then, to induce the formation of a densely fibrous investment to active tubercle, and by this process of encapsulation to limit the diseased product, and as it were to imprison the bacilli.

That chloride of zinc does possess the property claimed for it, is sufficiently proved by the experimental study conducted by M. Lannelongue, in conjunction with M. Achard; but the adoption of his treatment will depend upon the confirmation of his results at the hands of others. We confess that, while recognizing its possible utility in tubercular joint-disease and glandular affection,—in some cases as a curative agent, in others as a useful adjunct to further surgical proceedings,—we must speak with the greatest reserve upon its application to internal tuberculosis, and especially to cases of pulmonary phthisis. M. Lannelongue gives notes of two cases of commencing pulmonary tuberculosis, both in children, in which a single injection of 2 drops of a 1 in 40 solution was made into the apex of the affected lung (through the second intercostal space). In each case râles previously present disappeared after the injection, and in one case the temperature remained normal, in the other it rose slightly on the fourth and fifth days; but these cases are by no means conclusive, and it is impossible to base any definite opinion upon them. Indeed, on the whole subject of the curative effect of the method, M. Lannelongue speaks

with commendable reserve; and although M. Le Fort claims a priority in the treatment of articular tubercle on the same lines,—having in 1879 employed injection of sulphate of zinc for this purpose, with results which at first were encouraging, though later there was recurrence of the disease,—there are differences in the methods employed in the two instances; and it may well be that the new procedure may be found to be of more considerable utility. It has one great merit, that of simplicity, and it deals with a substance the composition of which is no mystery.

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*THE INCUBATION PERIOD AND ITS SIGNIFICANCE.*

In considering the nature of the so-called specific infective disease, as revealed by the light of modern research, it is impossible not to be struck by the great limitations that are placed on all our efforts to strike at their root, other than by way of prevention. Nevertheless, it must be apparent to the least reflective, that if medicine is to advance in the art of therapeutics, it should seek continually not only to prevent disease, but to counteract its effects when it has gained possession of the organism. In the case of the specific diseases, which may now be assumed to be due to the entrance into the body from without of some virus, an assumption warranted by the proved facts of bacteriological research, we are confronted with the problem how we can assist to the best advantage in the expulsion of the morbific agents, or in the neutralization of their action. Hitherto we have not been in a position to say that anything more can be done than to render such support to the vital forces as will enable the blood and tissues to successfully resist the noxious operations of the poisonous agencies. For in spite of all that has been written of the value of antiseptics, their application in internal medication is singularly, though not surprisingly, inadequate. Indeed, it can hardly be expected that any drug can be administered with safety which can influence the operation of a subtle and widely-diffused virus, which, though varying in intensity, produces its effects on all parts and organs. For a time the human body becomes one vast culture-ground for the growth of foreign organisms, and the issue of the case depends on many factors, such as the suitability of the soil, the intensity of the generated poisons, and the power of resistance inherent in the individual tissues.

In a recent article M. CUFFER (*Rev. de Méd.*, June, 1891) suggestively points out that our hope of really and effectively treating these diseases by specific measures must largely rest upon the ability to recognize them in their earliest stage. This stage is, he maintains, the so called incubation period, for he holds it to be erroneous and inexact to exclude it from our conception of the disease as a whole. That which is commonly called the "invasion" of a disease is really nothing more than the overt manifestation of the operation of a virus that may have been already working its baneful influence for hours or days or even weeks before that time. Applicable as this reasoning is to the acute infective disorders, it is even more so to such an affection as tuberculosis, in which there is every reason to believe, from both the teachings of clinical experience and those of laboratory experiment, that a considerable interval of time must elapse between the actual invasion of the bacillus and the formation of "tubercles" and the overt signs of tuberculosis. He would term this latent period the "pregranulic" stage, but it would be quite as accurate to call it "pretuberculous." It is suggested from the analogy afforded by Pasteur's results in hydrophobia that the subjects of tuberculous infection may possibly be successfully treated in this the first period of infection, when but little can be hoped from any other measures, even by the application of some such method as that of Professor Koch, to counteract the ravages of the declared disease. Indeed, the general experience of Professor Koch's treatment by tuberculin has been to show that it is only possible to effect any marked amelioration in the symptoms when cases are treated at the earliest period; and *a fortiori* it might be hoped that, if means could be afforded for the recognition of tuberculous infection before any manifest signs of tuberculosis appeared, a possible means of checking their development might be afforded. As regards tuberculosis, M. Cuffer considers that we have at least two clinical indications of the bacillary invasion. These are *fever* and *anæmia*. Often, he says, long before any manifest signs of tuberculosis, before any cough or other functional derangement occurs, there will be complaint of malaise and a degree of pyrexia which may even lead to a suspicion of typhoid fever; and he compares the slighter evidences of tuberculous infection with those rarer and intensely rapid cases of generalized tuberculosis which are marked by high fever from the

onset to the fatal termination. There is nothing improbable in the notion that the invasion of the bacilli of tubercle is first evidenced by the occurrence of fever; but, regarded from the practical point of view, and in view of the admitted difficulty of the recognition of developed tuberculosis in its early stages, it is hard to see how such a conception will aid us much in any line of treatment. To fever he allies the development of anæmia, which, he considers, has a direct relation to the growth of the bacilli, and he further declares that this is associated with enlargement of the spleen, which can be perfectly well recognized. His application of these considerations to practice is based on the doctrine that, in order to combat bacillary invasion, the soil must be modified, and one great element in this is to maintain the healthy nutrition of the body.

From the very first, then, he counsels the adoption of restorative measures, good and sufficient food, and the care of the digestive organs. Since the febrile symptoms are the index of the presence of the microbes in the body, it is useless to rest content with febrifuge remedies. The treatment must be directed against the microbes themselves, and not against the disturbances of which they are the source. Now, since there is reason to believe that the anæmia is due to the directly destructive action on the blood-corpuscles of the bacilli which live at the expense of the oxygen in the corpuscles, M. Cuffer thinks that in gallic acid there is a remedy which from its affinity for oxygen will indirectly operate as a "microbicide." For such a remedy will so modify the soil as to render it inappropriate for the sustenance of the bacilli. It will prevent their growth, and it will do so without exerting any injurious effect on the body itself. But tannin and gallic acid by their astringency may also further prevent the tendency to vascular congestion, which is such a favoring cause of dissemination of tubercle. The adoption of such remedies (with which antipyrin may be combined) is, however, limited to the "pregranulic" period, and that being so, we fear that it may be long before they can be generally appreciated. Nevertheless, we do not deem M. Cuffer's theoretical reasonings as matters to be lightly dismissed. They are in perfect accord with the etiological facts so far gleaned as to tuberculosis, and where they fail is not so much in the existence of flaws in argument as in the intrinsic and almost insurmountable difficulties of the subject. It is, as we have often said, extremely difficult to diagnosticate a developed tuberculosis. It is infinitely more difficult to be sure of the diagnosis of bacillary infection; and yet this is the unknown land to which the steps of future investigators must be directed until it has been thoroughly explored.—*Lancet*, July 4, 1891.

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### *THE TREATMENT OF BROMISM.*

FÉRÉ some time ago advised intestinal antisepsis in endeavoring to counteract the unpleasant effects of the long-continued use of the bromides. According to the *Bollettino della Poliambulanza di Milano* he has recently made a second communication on the subject. He employs β-naphthol combined with salicylate of bismuth. Sixty grains of the former and thirty grains of the latter drug are given daily. Thanks to this antisepsis, he is enabled not only to continue the use of the bromides, but to increase the dose up to two hundred and even two hundred and fifty grains a day. The treatment is especially effective in causing the disappearance of the cutaneous manifestations of bromism. Since borax has come into use in the treatment of epilepsy, Féré has noticed that it also often caused unpleasant disturbances of the skin. He has, therefore, employed the same method of intestinal antisepsis, and found it equally successful. He suggests that further experimentation may show that intestinal antisepsis will permit of the employment of many other drugs which at present are not well borne by the system.—*New York Medical Journal*, August 1, 1891.

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### *TREATMENT OF TYPHOID FEVER.*

DR. TORDEUS has been employing with considerable success a treatment for typhoid fever in the St. Pierre Hospital, Brussels, which consists essentially of moderate doses of an antipyretic combined with an antiseptic. Thus ten grains of acetanilide and an equal quantity of resorcin, or about half that amount of thymic acid, are made up into a five-ounce mixture with a compound decoction of aloes, and tablespoonful doses administered every three hours. This was found to exert a remarkably beneficial effect not only on the temperature, but also on the general condition of the patients. From trials made with acetanilide alone, it was evident that the antipyretic effect was almost entirely due to the combination with it of the resorcin on the

thymic acid. Several children were included among the patients so treated, the doses given being of course proportionately smaller. Dr. Tordeus is of opinion that treatment of a similar description will be found suitable in other zymotic diseases; indeed, he has tried a combination of acetanilide and benzoic acid in measles and in croupous pneumonia, the latter drug being selected in preference to resorcin on account of its possessing expectorant as well as antiseptic properties.—*Lancet*, August 1, 1891.

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*A NEW METHOD OF PRODUCING LOCAL ANÆSTHESIA.*

DR. WIESENDENGER describes in the *Journal für Zahnheilkunde* a new method of producing anæsthesia by the application of cold, the characteristic feature of which is that it is not the cold-producing agent which touches the desired part, but a metallic tube or chamber which is cooled by carbonic acid. The cold may, according to the requirements of the case, be regulated from the temperature of cold water to one sufficiently low to cauterize. The first symptom of this artificial cold is anæmia of the cellular tissue, producing a slight sensation of burning, which is followed by anæsthesia, which lasts from one to two minutes and then disappears without any ill effects. As the instrument may be manufactured of almost any shape, it is evident that this new method may be used for a variety of purposes. The simple turning of a tap will regulate the stream of carbonic acid to any degree of temperature down to 4° F. No moisture is produced. In using this cold for the purpose of cauterizing, the surgeon has the advantage of producing anæsthesia at the same time. When applying it to any of the internal cavities, such as the mouth, it is necessary to have the parts carefully dried, as the tissues would otherwise adhere to the instrument. Dr. Kummel applied the method in the case of a boy in the Maria Hospital at Hamburg with such complete success that the boy looked on without moving a muscle while a deep incision of twelve centimetres in length was made in his thigh. Other gases which can be brought into a fluid state may be used in place of carbonic acid. The carbonic acid which has been used for the purposes of anæsthesia may be led into a vessel which has been tested to a pressure of three atmospheres, and is provided with a manometer and safety-valve, whence it could be used as a motor agent or for preserving food. An iron bottle of fluid carbonic acid at a pressure of fifty atmospheres is sufficient for fifty operations. This can be bought for four or five shillings. The instrument for the application of cold to the tissues costs thirty shillings.—*Lancet*, August 1, 1891.

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*THE ABORTIVE TREATMENT OF ERYSIPELAS.*

DR. NATALE AMICI'S method consists in sterilizing the streptococcus of erysipelas in the shortest time possible. Infection is not always limited to the reddened portion of the skin, but is often found beyond this in the latent state, even at the distance of thirty-five to forty centimetres, as the author has been able to undoubtedly prove in erysipelas of the extremities. It is not always easy to decide whether the infection be limited to the reddened skin alone, as is especially the case when the disease is met with at its beginning, or is beyond the boundaries of the inflamed spot. In general one may suspect that the infection has overleaped the apparent limits, if from the first there be symptoms of any gravity, as high fever, headache, burning thirst, and vomiting. Besides these phenomena in such cases, the apparently normal skin will be found on pressure to be painful, which pain will be more striking if pressure be made upon the inflamed focus. In other cases isolated inflamed spots, of the size of a franc-piece, will be discovered scattered here and there on the surface of the normal skin; these are also sensitive to pressure and already foci of infection. As one withdraws from the central infected and inflamed spot the cutaneous painfulness on pressure decreases gradually until where it ceases one may assume that healthy skin is reached. Hence, if one would stay the progress of the disease, these outrunning points of infection must be sterilized. Therefore this method of abortive treatment consists in carefully recognizing latent infection in order to combat it as quickly as possible. Any suitable antiseptic may be used. The writer employed solutions of carbolic acid and alcohol, carbolic acid and glycerin in equal parts, and, finally, in those cases where this remedy is not well borne, he recommends the following:

Hydrarg. chlor. corrosiv., .03 gramme;
Glycerin, 30 grammes.
For external use.

All these three solutions are to be applied locally by means of a small brush. This

same treatment is also useful in lymphangitis. —*Journal of Cutaneous and Genito-Urinary Diseases*, August, 1891.

### *SULPHOICHTHYOLATE OF AMMONIUM IN GONORRHŒA.*

Dr. Koster states that he has obtained most remarkable success in the treatment of four cases of gonorrhœa, three of which occurred in men, and one case of gonorrhœal cystitis in a woman, by a solution of a one per cent. solution of sulphoichthyolate of ammonium. In the men, he ordered urethral injections, repeated three times daily, and there was almost immediate disappearance of pain on micturition and of the painful nocturnal erections, with complete cessation of the discharge in from eight to twenty days. In the case occurring in the woman he ordered this solution injected twice daily into the bladder, to remain there for about five minutes. The pain was rapidly relieved, and the abundant deposit of muco-purulent sediment in the urine disappeared after the third day, with complete cure in two weeks.—*Journal de Médecine de Paris*, June 14, 1891.

### *INSOMNIA OF GASTRO-INTESTINAL ORIGIN.*

Writers have dwelt much on the cerebral hyperæmia attending disordered states of the stomach. That indigestion causes insomnia by exciting the cerebrum is a matter of common experience. With many persons even the active exercise of digestion, if this be at all difficult, is incompatible with sound sleep. Such individuals refrain from lunching or partaking of a hearty meal before going to bed. Certain valetudinarians cannot drink a glass of milk or eat a biscuit late in the evening without atoning for the indiscretion by hours of sleeplessness.

Such inhibition of the cerebrum by the stomach is of frequent experience in the nursery. The first thing the physician thinks of when consulted with reference to insomnia in a young child is the probability of indigestion as the main factor in the case. What is the quality of the food, what about the quantity, and what is the condition of the digestive organs? Attention to these points, in the absence of objective signs of importance as fever, will generally put one on the track of the cause and suggest the remedy.

The indigestion may be functional or organic, and all pathological conditions of the stomach are likely to be accompanied by insomnia. Structural diseases, as gastritis, ulcer, gastrectasis, cancer, cause sleeplessness, both by the pain and discomfort, and the consequences of indigestion which attend them. One of the most frequent symptoms of indigestion is flatulence. The stomach, by failure of the normal peptonization process, is inflated and oppressed by the gases of decomposition; the distended stomach presses on the thoracic organs, embarrassing the heart and causing troublesome palpitations. Toxic products are often formed by the malelaboration of peptones; these irritate the nervous centres and render the cerebrum hyperæmic.

But there is another aspect of the question. In persons with healthy stomachs and normal arterial tone, the digestive process is not prejudicial to sleep. Somnolence, in fact, often attends digestion, especially after a hearty meal. This has been attributed to flushing of the stomach, at the expense of cerebrum, which is a necessary condition of its function. Digestion normally occurs without attracting the consciousness, and there is no reason why, on proper occasions, sleep should not follow a hearty meal in men as well as in carnivorous animals. It is not true that during sleep the digestive functions are practically suspended, as some authorities have said: "During sleep the medullary centres relax their activity, digestive fluids are not secreted, and the movements of the gastro-intestinal canal almost, if not entirely, cease." It is surprising to meet with an error of this kind in a writer ordinarily so accurate as MacFarlane. The stomach and intestines continue their function during sleep, though with lessened activity; the secretions are not suspended, the unstriped muscular fibre continues a constant though diminished action; the spinal cord even seems preternaturally active, the inhibiting restraint of the cerebrum being withdrawn. In reality, in sleep all the essential functions continue to be exercised. Those most indispensable to life—circulation, respiration, digestion, etc.—are performed as during the waking period, though more sluggishly. Thus, the heart beats more slowly during sleep. "*Pulsus in somno parvi, languidi rari*," says Galen. With the retardation of the circulation, there is diminished activity of the secreting glands (gastric, intestinal, pancreatic, etc.), but in healthy persons these organs are adequate to the work imposed upon them, as is proved by the fact

that multitudes can eat a full meal on going to bed, sleep soundly, and be ready for another meal on awaking. Nor can it be said that the peristalsis of the gastro-intestinal canal ceases during sleep, any more than the contraction of other unstriped muscles (the arterioles, for instance), which are not under the will.

Germain Sée, who refers most cases of digestive insomnia to difficulties attending the secondary or intestinal digestion (and here he is seconded by MacFarlane), thus defines this kind of insomnia: "Intestinal digestion generally begins three hours after a meal and ends in seven or eight hours. The patient, we will suppose, sups at 6 P.M. At ten o'clock he goes to bed, but cannot sleep till long after midnight. This is the time when the pancreatic-intestinal digestion is going on; when this is finished, the patient goes to sleep.

"To prove that I am right as to the cause of the insomnia, let the patient eat a light supper at the usual time, or let him sup at four o'clock in the afternoon, and he will find that he will go to sleep at the proper time."

In the treatment of insomnia from indigestion, the quantity and quality of the food must be taken into account, the condition of the stomach, intestines, and the auxiliary organs.

1. Errors are most frequently committed as to quantity. The digestive organs may be competent to dispose of a certain bulk without pain or difficulty, while an excess causes embarrassment to the stomach; decomposition and flatulence set in under unmolested microbic rule; putrid and more or less toxic gases and ptomaïnes are generated, and a "bilious" condition supervenes, such as every one has experienced at times. It is, doubtless, true that while multitudes are underfed, more persons are injured by excessive eating than by a spare diet. Insomnia naturally comes in as one of the consequences of overeating and overdrinking, for a burdened stomach will not let the brain rest.

The proper remedy for sleeplessness arising from this cause is apparent,—it is to curtail the daily rations to the physiological standard. The necessity of eating slowly and deliberately with thorough mastication of the food is apparent; those that "bolt" their food are sure to eat to excess.

2. Food of poor or insufficient quality produces anæmia and starvation of vital organs, including the cerebrum, and hence engenders insomnia. Physicians cannot too much insist on the necessity of a full diet,—that is, of an adequate admixture in the daily fare of albuminoids, fats, and carbohydrates. Food of indigestible quality produces essentially the same evils as excessive alimentation. Under this head may be included food improperly or insufficiently cooked (good cookery under our civilization has become indispensable to healthy digestion), and foods that most persons of sedentary habits find hard to digest, as unripe fruit, pastries, hot bread, fried pork, confectionery. Of course, butcher's meats should be selected that are tender and juicy, and in the light of recent discoveries (Gautier, Selmi, etc.), it is doubtful if meat or game that has become high (*faisandé*) is fit for food.

Foods of themselves sufficiently digestible may become indigestible if too many kinds are eaten at a meal. But this brings us again to the evils of excessive eating.

It need not be repeated that he who would sleep well must avoid those articles of diet which have been found to be indigestible, or should indulge in them sparingly. Much depends, of course, on the muscular work done. Horace speaks of the *dura ilia messorum*. The hay-makers on the salt marshes need food hard of digestion,—that is, food that is *slowly* digested, yielding up force for many hours; food that in common parlance "stays by," such as baked beans and pork, boiled beef and cabbage, and mince pie. Such persons sleep well, despite their hearty fare; it is especially the "brain-workers," the men of sedentary habits, that are upset by a rich diet.

3. A healthy digestion presupposes a healthy state of the stomach, intestines, and accessory organs, and any derangement of these viscera must be corrected by suitable medicinal and dietetic means before normal sleep can be enjoyed.

To enter on a consideration of all these derangements would take more space than we have at our command. The hygienic treatment of indigestion includes dieting, exercise, recreation, cold bathing, etc. The cold shower-bath in the morning is sometimes a powerful aid to digestion. Exercise promotes a more vigorous circulation, and favors peristalsis and chymification; equally necessary are change of scene, diversions, and the cultivation of a contented, cheerful frame of mind.

Among the medicinal means are—

1. Such as favor gastric digestion,—namely,

alkalies before meals, and acids with pepsin after. Clinical experience has proved pepsin to be of some value. Small doses of strychnine are useful.

2. For acid dyspepsia full doses of bicarbonate of soda are naturally indicated. Professor Sée advises dyspeptics with excess of acid secretion to take a drachm of bicarbonate of soda in hot water on going to bed. It is certain that in certain morbid states of the stomach and intestines, whether due to "*hyperchlorhydria*" or to excess of mucus, the beneficial sedative effects of alkalies are pronounced.

3. Constipation is another recognized cause of insomnia, whether by the reflex irritation of retained excreta, or by the flatulence which frequently attends a loaded colon. Here the remedy is obvious: such laxatives as rhubarb, Glauber's salts, cascara, enemata of hot water, etc. Persons who sleep poorly from this cause often find a hot-water enema on going to bed a sovereign remedy.

When that old bugbear, a torpid liver, is at fault (if this can be determined), of course a blue pill, a dose of euonymin or podophyllin would seem to be indicated.

There is an acidity of the stomach which depends on abnormal acid ferments, the products of decomposition of starches or sugars in the food. In these cases, washing out the stomach by means of emetics and copious draughts of warm water every night for three or four nights, as MacFarlane recommends, often proves very efficacious. The same writer advises ferro-alumen in 3-grain doses for pyrosis along with 3 drops of dilute hydrocyanic acid, and turpentine in 10-drop doses for flatulence, as most effective remedies.—*Boston Medical and Surgical Journal*, June 25, 1891.

### *THE TREATMENT OF OTALGIA.*

In the *Journal de Médecine de Paris* for June 14, 1891, Dr. Gomperz writes that the treatment of earache necessarily varies according as to whether the cause is found in a circumscribed or diffused external otitis, purulent or catarrhal otitis of the middle ear, or whether it be otalgic or neuralgic in character. In the earache of external otitis, scarifications with local blisters and applications in the form of aural suppositories are of the greatest value, and he recommends the use of suppositories made with gelatin and containing ½ grain of morphine and cocaine each, or extract of opium may be used in somewhat larger amount. Solutions of boric acid and instillations of solution of cocaine may be well combined with this treatment. Even six or ten per cent. solutions of cocaine may be used, to which a little glycerin has been added, and may be of advantage in diminishing inflammation. Otalgia may result from dental decay or ulcerations in the gums or cheeks; when such can be detected, the application of cocaine to the region will almost always produce immediate relief of the pain.

### *STOMACH-WASHING IN INFANTS.*

This procedure has been the subject of much discussion during the past few years, and seems to be growing in favor. Its most active advocates are among those who have had most experience in its use. It has been thus far most extensively employed in hospitals, and in many institutions has already become an established method of treatment. With the appliances always at hand, and with the skill that comes from experience to both physician and nurse, it is a most simple and effective measure. In private practice, with a physician of less experience and a nervous mother or nurse for an assistant, it is obviously less satisfactory. It will probably never become as popular in private practice as other simpler but less effective measures. It is a mistake to suppose, however, that it is a serious operation, to be tried only as a last resort. Dr. Booker, in the *Johns Hopkins Hospital Bulletin*, describes minutely his method, which is very simple and similar to that of Epstein. A soft Nélaton's catheter, about No. 9, is attached by a short glass tube to a common rubber tube two feet long, with a two-ounce glass funnel fitted into the distal end. This is all the special apparatus needed. A pitcher containing half a gallon of tepid water is placed in a convenient position for use. Sometimes it is of advantage to add a teaspoonful of equal parts of bicarbonate and benzoate of sodium. The child is held in the nurse's lap in a sitting posture, with the head slightly bent forward and the hands confined by the nurse's left arm passed across the chest. The child should be protected by a rubber sheet. The tube is moistened with water, inserted into the mouth, passed back to the pharynx, and directed downward through the œsophagus into the stomach. Gagging or even vomiting may occur, especially if the tube is delayed in the œsophagus or pharynx. This usually ceases when the

tube reaches the stomach. If it continues, the tube should be drawn up a little and carried to one corner of the mouth. It is unnecessary to depress the tongue, a procedure which is apt to provoke vomiting.

When the tube is in position, an ounce or two of water is poured into the funnel, held just above the level of the child's head. By lowering the funnel before the water has fully flowed out of the tube, the contents of the stomach are readily drawn out by siphon action. The tube is then raised and the funnel again filled, and the process is repeated until the water flows away clear. There is no possibility of the tube's entering the larynx or perforating the walls of the stomach.

The stomach-tube is employed for three purposes,—1, in the study of physiological digestion; 2, in the study of changes taking place in disordered digestion; 3, as a therapeutic measure.

Troïtzky has recently reported a large number of cases satisfactorily treated by stomach-washing. The best results were obtained in simple gastric dyspepsias without fever. In chronic diarrhœa or gastric disorders it is often of value, but must be accompanied by the use of medicinal measures.—*New York Medical Journal*, August 8, 1891.

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### *CHLORIDE OF METHYL AS A LOCAL ANÆSTHETIC.*

Dr. S. E. Berezovsky (*Letopis Khirürgitcheskaho Obshtchestva V Moskve*, December, 1890) describes experiments on dogs which he has made with the object of testing the anæsthetic action of chloride of methyl, as well as its effect on various animal tissues. The substance was used in the form of a spray. The experiments showed that,—1, a spray of two seconds' duration, when directed against intact integuments, produces complete anæsthesia lasting from fifteen to twenty seconds, the tissues remaining sufficiently soft to allow cutting; 2, a spray of five seconds' duration, while inducing a somewhat longer anæsthesia, freezes the skin to an inconvenient degree; 3, a seven-seconds' spray gives rise to consecutive local congestion and inflammation; 4, a twenty-seconds' spray causes sloughing of the tissues down to the muscular layer; 5, a convenient and harmless anæsthesia induced by a two-seconds' spray, can easily be prolonged up to five minutes by repeating the spray at short intervals; 6, sufficient anæsthesia of exposed bones can be produced in the same way; 7, the spray does not cause either gangrene or thrombosis of blood-vessels. The author next employed chloride of methyl (a spray of two seconds' duration, repeated according to the necessities of the case) as a local anæsthetic, in a long series of operations, such as circumcision for phimosis (four cases), removal of elephantiasis of the prepuce (one), evulsion of toe-nails (two) excision of cancer of the lip (two) and atheroma (three), large post-auricular dermoid (one), incision for empyema (two), scraping out tuberculous ulcers and fistulæ, etc. The results were invariably most satisfactory, the operation being in all cases absolutely painless from the beginning to the end, while the healing of the wound left nothing to be desired, even in badly-nourished patients. The only disagreeable effect was a burning sensation at first; this, however, quickly gave place to complete numbness of the area sprayed upon. On the whole, the writer concludes that the chloride of methyl spray can be employed in all cases where an ether spray is used as a local anæsthetic; and that the former should be preferred to the latter, since (1) it induces anæsthesia "incomparably more quickly than" ether spray; (2) chloride of methyl is uninflammable, and hence can be safely employed in cases of cauterization, etc.; (3) it does not undergo any change from exposure to light or air; (4) it does not irritate mucous membranes even in children; and (5) it is cheaper than ether, since only very small quantities are required.—*British Medical Journal*, August 1, 1891.

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### *HYDRASTIS CANADENSIS IN THE TREATMENT OF NIGHT-SWEATS IN PHTHISIS.*

Dr. Cruse states, in the *Internationale Klinische Rundschau* for June 7, 1891, that having occasion to use this drug recently in some cases of hæmoptysis occurring in consumptives, he found that, in addition to the favorable influence on the pulmonary hemorrhages, that the night-sweats, which before had been very distressing, were now entirely prevented. This effect was especially marked in one case in the last stage of phthisis, in which he had for some time been compelled to resort to the almost continuous employment of hydrastis for pulmonary hemorrhages, and in whom the night-sweats were by this treatment entirely arrested. The author also refers to several other cases in whom atropine, agar-

acine, sulphonal, and ergot had only at first given some relief and afterwards proved inefficacious, and in whom he had resorted to the hydrastis, giving 30 drops each evening of the fluid extract. In all great relief of the night-sweats was obtained.

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*CHLORIDE OF AMMONIUM IN INFLUENZA.*

According to the Paris correspondent of the *Lancet* for June 27, 1891, at a recent meeting of the Academy of Medicine, M. MARROTTE advocated the use of chloride of ammonium in the treatment of epidemic influenza in preference to sulphate of quinine, as urged by M. Gellié, of Bordeaux, in his recent paper read before the Academy. M. Marrotte speaks very highly of the results obtained by chloride of ammonium, the advantages of which over quinine he claims to be that it is much cheaper, more rapid in its action, and brings about a more complete and definite cure. It is more especially in those forms of the disease which are complicated by pulmonary congestion or inflammation that chloride of ammonium will be found serviceable. From fifty to eighty grains may be given in twenty-four hours in the form of eight-grain powders, which may be conveniently concealed in a wafer. As the treatment of influenza is unfortunately, like many other therapeutic problems, a very open question, perhaps some of your readers on your own side of the Channel, whose opportunities just now are only too unlimited, might put the drug to the test and record their experiences.

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*ELEVATION OF THE PELVIS AS A MEANS OF RELIEVING VOMITING OF PREGNANCY.*

In the *Montreal Medical Journal* for June, 1891, SIR JAMES GRANT, M.D., writes that some years ago he was called to attend a lady in her first pregnancy, about the third month of utero-gestation, who for about ten days had been unable to take food and with great difficulty retained even the smallest quantity of liquid nourishment. Almost every form of treatment had been tried without any good result, and as a last expedient he decided to test the effect of elevation of the pelvis, which was accomplished by lowering the head and thorax, and placing several pillows under the sacrum. In a short time the change for the better was encouraging, and, continuing the position at intervals for a few hours, in two days the marked improvement in the system was quite evident, and utero-gestation proceeded to the full term without any return of this abnormal condition.

Within the past month, two cases of severe vomiting in early pregnancy came under observation, in both of which the same treatment was adopted with equally satisfactory results.

Guémot, referring to the rational treatment of vomiting during pregnancy, says that a morbid or abnormal state of the uterus, the nervous system, as the carrier of reflex action, and the stomach are the prime factors in the malady. The idea of Smellie's, that the complaint is "chiefly occasioned by fulness of the vessels of the uterus," certainly is most rational. The elevation of the pelvis gradually lessens the quantity and force of the blood in the uterine vessels.

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*EPHEDRA VULGARIS AS AN ANTI-RHEUMATIC.*

In a preliminary note in the *Bolnitchnaia Gazeta Botkina*, No. 19, 1891, DR. P. V. BEKHTIN, of Professor L. V. Popoff's clinic, in St. Petersburg, describes a series of therapeutical experiments with the *Ephedra vulgaris*, or "steppe raspberry" (Russ. *Stepnaia malina*), which plant (a member of the natural order Gnetaceæ, which grows abundantly all over Russia) is regarded by the Russian peasantry as a sovereign remedy for rheumatic and syphilitic affections. The observations were made on sixteen patients, of whom four were suffering from acute articular rheumatism (in one case complicated with pericarditis), two from chronic and two from acute muscular rheumatism, six from chronic and one from rheumatic sciatica, and one from rheumatic osteomyelitis. The remedy was used in the form of an "infuso-decoction" of one drachm of powdered stems and roots of the plant, and six ounces of water, a tablespoonful being given every two hours. The following are the principal conclusions arrived at: 1. The steppe raspberry is decidedly one of the most valuable antirheumatic remedies yet known. 2. The best results are obtained in cases of acute articular and muscular rheumatism. Even on the second day of the treatment pain greatly decreases, and the pulse and respiration become slower while growing fuller and stronger. In a couple of days the temperature returns permanently to normal, and articular swelling completely disappears, and in seven or ten days the pa-

tient is quite well. In the complicated case the pericarditis subsided, together with the other morbid phenomena. 3. In chronic cases the remedy acts somewhat less strikingly and less rapidly. Of the eight cases, in four (muscular rheumatism) a complete cure was effected, while in the other four (two muscular, two articular) a great improvement was obtained. 4. In rheumatic osteomyelitis and sciatica, however, the remedy seems to produce only slight and temporary amelioration. It may be added that in both the cases all ordinary antirheumatic drugs (salicylate of sodium, antipyrin, antifebrin, salol, phenacetin, etc.) utterly failed to afford any relief. 5. Ephedra invariably has a beneficial effect on the gastro-intestinal tract, habitual constipation disappearing, etc. 6. The remedy also appears to possess a diuretic action, which is especially pronounced in cases of articular rheumatism. Dr. Bekhtin adds that he made some experiments on frogs, injecting hypodermically a fluid extract of ephedra (strength not stated) in the dose of 1 cubic centimetre. The injection gives rise to initial violent general excitement of three or four minutes' duration, followed by a total inhibition of reflexes and sensibility, with considerable slowing of the hearts' action and respiration. The symptoms last from half an hour to an hour, after which the animal slowly returns to its normal condition. Some time ago Professor Nagai, of Tokio, succeeded in isolating from the plant an alkaloid, which he termed "ephedrin." According to Professor Kobert the substance, when injected into dogs and cats (in the dose of .2 gramme), causes intense excitement with general convulsions, exophthalmos, and mydriasis. Dr. Miura, of Tokio, uses hydrochlorate of ephedrin as a mydriatic. —*British Medical Journal*, August 8, 1891.

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### *THE STERILIZATION OF MILK.*

The first endeavors to sterilize milk were made chiefly from a commercial stand-point, —*i.e.*, to preserve the fluid sweet a longer time. But, as the knowledge of pathogenic germs and the action of ferment-organisms became clearer, the suggestion naturally entered the medical mind to sterilize milk from a hygienic and therapeutic point of view, chiefly for the nourishment of infants in health or disease (from the *Bacteriological World*).

A large number of experiments have been made by various experimentalists, with a view to discover the most practicable means of sterilization combining effectiveness, cheapness, and harmlessness.

To that end, drug after drug, gas after gas, were tried in vain. We have still to rely on the action of heat, though perhaps electricity under proper conditions may prove successful. But for every home, for every physician, heating is the only practical process.

To kill all the bacteria usually found in milk—and there is always a wonderfully great and diversified army of them—it requires heat a few minutes above 224° F. A special steam sterilizer is necessary to attain such a high temperature. The same effects may be obtained usually by boiling the milk about thirty minutes. Heating a few minutes between 158° and 176° is sufficient to destroy temporarily the energy of a large number of milk microbes, including several disease-germs, but does not kill many of them, and is not, therefore, sufficient as a preservative means. This is the temperature (about 617°) the application of which is known as pasteurization.

Unfortunately for the people, there are yet some medical men who will not concede any dangerous properties to microbes, and a vast number who are in ignorance of the action of germs in milk before or after ingestion.

Is it only to destroy disease-germs that sterilization is indicated? By no means. Indeed, in infant-feeding it is chiefly to prevent the irritative action of acid produced by microbes or germs of all kinds, whether truly milk ferments, pathogenic bacteria, or organisms harmless under ordinary circumstances.

Milk coagulates, acidifies, under the influence of vegetative phenomena of various ferment-organisms. The acid produced has the most baneful action on the delicate stomach and intestinal canal of the child. Sterilization of fresh milk destroys the property of the germs before any acid is produced by their process of nutrition.

Besides the true milk-ferments of various kinds, there is a number of cocci and bacilli which grow in milk. Among the former there are many which produce acids. Hence they, too, are deleterious and dangerous in the milk fed to the young.

Duclaux, in his researches on the subject, noted that milk sterilized at about 167° F. was about free from acid-producing germs, but still contained live bacilli,—a class of microbes apparently more difficult to alter, acting chiefly on the casein, and producing, as a

rule, alkalinity instead of acidity. This fact suggested to the mind that, even though the heating of milk be not carried to the boiling-point, it may be very useful in arresting the growth of the acid ferments, and leaving therein the bacilli, causing, by their nutrition, alkalinity of the media. We all know how frequently lime-water is administered to bottle-raised babies to counteract the effect of acidity. Theoretically, we might, on the same principle, ascribe a beneficial influence to the alkaline-producing microbes left in the milk by pasteurization,—influence which may be doubly useful because these organisms live at the expense of, and, therefore, reduce the casein, which, in cow's milk, is always in excess of the necessary quantity for very young children.

In the careful, constant use of pasteurized milk there is neither colic, green diarrhœa, nor other intestinal disorders so common when using raw cow's milk; but if the milk be highly heated, say at the boiling-point, for several minutes, it is cooked and the casein is affected; it digests well, but there may be some slight colic, owing to the hardness of the fæces, and consequent interference with the naturally easy and frequent evacuation of the bowels at a tender age. But there are not any other intestinal troubles.

Pasteurized milk, however, should be used early, for it will not keep long, the germs not having all been permanently arrested; therefore, only careful methodical people can safely utilize it. Thorough sterilization, on the other hand, is practicable by all who may provide a vessel of some kind to boil water. To heat the milk at any temperature, it may be put in nursing-bottles, plugged immediately with clean cotton wool (absorbent cotton), and then the bottles should be placed in a water bath, allowing the water and bottles to heat simultaneously. There are more convenient steam sterilizers manufactured now for the purpose.

We have caused the use of both sterilized and pasteurized milk in a number of bottle-raised children in the last two years with marked success, and we would recommend to doubting physicians the careful study of fermentation, coagulation, and digestion of milk, and the effect of pasteurized, sterilized, and raw cow's milk on the sensitive digestive organs of the young.

It must not be forgotten either that the germs of cholera, typhoid fever, fibrinous pneumonia, and others are destroyed or arrested in their pullulation by a temperature not higher even than that used in pasteurization,—*i.e.*, 158° to 167° F.—*Druggists' Circular*, July, 1891.

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### *THE PATHOLOGY AND TREATMENT OF ANGINA PECTORIS.*

For the last few months, with the exception of tuberculosis, no subject has more generally attracted the attention and excited the interest of the medical profession than the pathology and treatment of angina pectoris. In the May number of the GAZETTE of this year we devoted considerable attention to the discussion of this subject held at the Medical Society of London at successive meetings, and as a continuation of this subject we reproduce an abstract of a clinical lecture recently delivered by PROFESSOR NOTHNAGEL, of Vienna, which may well be accepted as representing the German views on this important subject.*

Professor Nothnagel used as the text for his address a patient suffering from insufficiency of the mitral and aortic valves, complicated with a series of symptoms which play an important *rôle* in the clinical treatment of heart-diseases.

From his history we learn that the patient suffered for a short time in 1859 from intermittent fever which recurred in 1860 and 1866, persisting several weeks. In the winter of 1889 he had an attack of influenza, after which, without any other apparent cause, violent beating of the heart ensued, accompanied by pains in the cardiac region and distressing difficulty of breathing, so that the patient had the sensation of dying during these paroxysms and was forced to assume the erect posture in order to breathe. Despite rigid dietetic precautions, the attacks were repeated, especially in the evening, and as he noticed their more frequent recurrence after late suppers, he dispensed with the evening meal altogether. In May of this year violent pains appeared in the cardiac region, with palpitations, returning after the lapse of two hours. After a half-hour's pause, difficulty of breathing set in. After ten days this condition ceased, and at present the patient is very well; he complains of occasional difficulty of breathing, which, however, is caused to disappear by deep inspiration.

We perceive that the patient, in the course of a valvular disease,—insufficiency of the

* Abstract of a translation prepared for the GAZETTE from the *Internationale Klinische Rundschau* by Mr. J. Helfman, Detroit, Michigan.

aortic and mitral valves having been recognized, without disturbance of compensation,—presents symptoms of a definite character, which do not directly depend upon the valvular defect. The statements of the patient do not afford us a distinct image of those symptoms comprising that condition which we designate by the name of stenocardic attacks, stenocardia, angina pectoris.

In the majority of cases of heart-disease the patients either have no subjective difficulties, or, when such are present, they manifest themselves in the form of dyspnœa, or a sensation of oppression, which occurs either after severe exertion, or, finally, in connection with disturbances of compensation. Here enters into symptomatology of heart-diseases a new feature,—namely, the element of pain. It is known that pain may occur in a series of heart-affections,—a pain manifesting itself as hyperalgesia in the cardiac region and thence radiating out over the thorax. In such cases the pains have a definite character; they occur in the form of attacks which, as stated before, are briefly termed stenocardic paroxysms, anginose troubles.

The classical picture of these paroxysms, judging from the portrayal of the patients, is that of one of the most dreadful of human experiences. Its chief and characteristic feature, as given unanimously by all patients, is the sensation of impending death. He who has never experienced such sensations cannot possibly form of them even an approximate conception. It must be the most appalling of human trials. The dread of death in full consciousness must be the most thrilling of sensations. To this sense of destruction are added pains in the cardiac region, rendering the condition more tormenting and insufferable. The patients state that they are seized with grasping or clawing pains in the heart region, and that they feel as though the heart were standing still and life ebbing away. But the pain is not confined to the cardiac region alone, but radiates thence into the left half of the thorax,—even into the left arm and down to the very fingers. It happens in some cases that the pain attacks the right arm, and the left as well as the right arm may become its seat. Besides the feeling of pain, which varies in intensity in the different paroxysms, the patients undergo paræsthesia in one or the other upper extremity,—a sensation of numbness, of tickling, of formication, and of transient weakness,—a paresis of the upper left extremity. With this is associated, though not in all cases, a feeling of inability to breathe, but this gives way to the sense of destruction, and the pain. The phenomena are of varying degree and very different duration. Some patients are attacked by this feeling only a few times during their entire existence; in other instances these paroxysms are more often repeated.

The objective process is a varying one and does not accord with the subjective statements of the patients. Frequently the latter present an expression of the profoundest anxiety. If they are attacked by this feeling suddenly on the street,—and in general the paroxysm does not approach gradually, but occurs in the midst of a general feeling of well-being,—the victims look for a support, lean against a wall or a tree, and stand motionless, most of them instinctively finding in absolute quietude their best relief. The visage is usually unchanged, or it becomes anxious; respiration is in most cases calm, though the sufferer has a feeling of dyspnœa. At other times, in consequence of the pain, it becomes irregular, at times hurried, at times retarded, now very deep, and now scarcely perceivable. Especially in patients suffering from general arterio-sclerosis or genuine contracted kidney, the predominating feature of the disease is the occurrence of accesses which, in their sudden approach and severe dyspnœa, bear a certain resemblance to bronchial asthma, and even the most expert observer cannot be prevented from mistake in many cases. The pulse also changes in character and frequency. In one the pulse is calm and even, and the paroxysm proceeds, despite the most terrible agony, with calm respiration and normal pulse. At another time modifications ensue; the pulse becomes arhythmic, or presents those peculiarities which are evidence of a definite anatomical heart-affection. At times the heart-tones assume a fœtal character. The tones become duller and lose the measured rhythm of the healthy adult, and assume a uniform intensity, the pulse becoming very frequent and weak. The heart-beats are then not only subjectively felt by the patient, but also found by the physician to be vibrating in character. In other cases the pulse becomes extraordinarily retarded. Traube, who suffered from such attacks, observed this phenomenon in himself. Traube, with his brilliant powers of observation, once in the very midst of an attack, and under frightful pain, took accurate notes and found that the pulse had sunk to 28 per minute, when insensibility supervened. Thus it will be seen that in individual cases the frequency of the pulse is materially reduced, and instances have been reported by

many observers in which the frequency fell below that noted by Traube in himself.

The loss of consciousness, described by Traube, is not of invariable occurrence, and when it occurs it is the result of several factors, such as depressed cardiac activity and the overwhelming pain, which tends reflexly in this direction, and the feeling of impending death: all these factors, when occurring with special suddenness and intensity, may cause loss of consciousness.

Other troubles, such as naušea, disposition to vomit, pains in the more remote nerve domain, as also in the province of the cervical and lumbar nerves, painful accesses in the abdominal organs, may occur and impart a special stamp to the disease.

Objectively, little is to be observed aside from those modifications comprising the fundamental ailment, which in different patients have such manifold forms.

The most various deviations from this picture at times occur. There are instances in which the radiation of the pain is entirely absent and the access is limited to the feeling of oppression in the breast and the dread of death; even the pain in the cardiac region may be lacking, and the paroxysm consist exclusively of anxiety with facial pallor and thready pulse. The diagnosis may also be rendered difficult, if, as is at times the case, the heart-symptoms fall to the background and the patient complain only of paroxysmal paræsthesia in the arm and impeded breathing.

The access may last a few seconds; at another time, several minutes, and may extend over hours; in the latter case we must look upon the matter as comprising a number of attacks following one another at short intervals.

It may now be asked, Under what conditions does this disease arise? How is it to be explained?

The disease occurs under varying circumstances and varying etiological relations. As fluctuating as this condition may be in kind and intensity, the fundamental features of the disease are always present,—namely, the pain, the oppression of the heart with feeling of destruction, and radiating pains in the arms.

There are three etiological groups of angina pectoris to be distinguished.

First, we must distinguish pseudo-anginose difficulties, not so named because the patient has no pain, but because the pain is not conditioned by a heart-affection, but has its source in other causes. As a second group, we may designate all those cases which occur in sclerosis of the coronary arteries. Germain-Sée, Ziegler, Leyden, and others have of recent years emphasized this connection between endarteric modifications in the coronary arteries and angina pectoris, and Cohnheim has even proved its existence experimentally in animals. This is the severest and most ominous form of this condition. A third group arises, with valvular defects, and finally, fourth, there is a pseudo-angina accompanying diseases of other organs.

Heberden and other investigators have proved that, at times, in the hearts of patients suffering from stenocardic spasms, no anatomical modification can be found, and for a long time Heberden's view prevailed, that angina pectoris was dependent upon vascular convulsion,—upon a convulsion proceeding from the aorta and extending to the vessels of one or both upper extremities; until, finally, through numerous post-mortem examinations, it was found that this peculiar condition was based upon sclerosis of the aortic system, and especially of the coronary arteries. The sclerosis of the coronary arteries forms a special and very important chapter in angina pectoris; however, this sclerosis is a not too frequent, though not uncommon, phenomenon, which, when extending to the small arteries and seizing upon the coronary arteries, produces modifications of the heart-muscle. It may be readily seen that the coronary arteries, like other periphery vessels, may be attacked by arterio-sclerosis. An endarteric degeneration develops in them, and, as a result, further modifications in the vascular wall. Not seldom may we observe myocarditic modifications in the heart. These myocardic modifications have frequently a very definite localization: we find here and there on the cardiac wall spots which have a sinewy-striped appearance, and are to be traced back to a transformation of the cellular tissue of the heart-muscles. Anatomical researches have shown that these partial chronic myocardites have their origin in a sclerotic modification of individual coronary arteries. These vessels are particularly end arteries, and in consequence of sealing one branch thereof, caused by an endarteric process, a thrombus forms, and the final result is, as the province of nutrition of this artery is closed, that a thrombotic softening of the affected heart-portion develops, and this part finally undergoes regressive metamorphosis. It is noteworthy that the modifications in the heart do not rest with the softening or fatty degeneration of the muscular system, but, on

the contrary, there results also on this spot a morbid growth of cellular tissue, so that we see a welted or callous myocarditis develop. This, accordingly, is the resulting condition from the partial sealing of the coronary arteries. Chronic myocarditis, as we find not infrequently, begins at this point in most cases, although due to other causes as well.

These modifications ensue only when smaller branches become gradually sealed; but it may also occur that larger branches may become obstructed, and when the lumen of the chief stem of the coronary arteries is invaded, a condition results which bears the greatest similarity to that of angina pectoris. This sealing has been artificially produced many times, by closing the coronary arteries, thus producing similar phenomena. Such experiments have been largely instituted by Cohnheim. If in curarized and artificially-respiring dogs one of the chief branches of the coronary artery is shut off, after a few seconds the number of heart-contractions diminishes materially; the heart-function becomes irregular and suddenly both ventricles stand still, while the auricles continue to contract. After one to two minutes, the heart stands still, and if then the obstruction be removed, and the vessel fills with blood, the heart's action soon returns to its normal course.

What was here experimentally produced occurs also in man. A number of cases have been described in literature—and such cases, moreover, are more frequent than the reports—in which sudden death, abrupt stoppage of the heart, was caused by an embolus in the coronary artery. This embolus may proceed from the aorta into the coronary artery, and it is easily perceived that when this happens the entire heart-muscle is shut off from access of blood. The further consequences take place in an analogous manner in the remaining organs, hence complete anæmia and absence of oxygen, producing collapse of the heart-muscle. Thus it will be seen that the most dangerous consequences, and even death, may ensue as a result of such a sealing of the coronary arteries.

In accordance with the stated anatomical condition of the heart, it is probable that the angina pectoris, at least in part, is caused by sclerosis of the coronary artery, for it may be readily assumed that the endarteric process, which attacks the peripheral arteries, may in a similar manner invade the coronary artery and its branches. But, as stated, this does not always seem to be the case, and there are many authenticated cases of stenocardia in which no sclerosis of the coronary artery, and indeed no sclerosis of the vascular system, was found. The author has compiled statistics on this subject, and finds that idiopathic hypertrophy of the heart, fatty and callous degeneration of the heart-muscle, concretio cordis,—that all these conditions seldom or never accompany angina pectoris; on the other hand, *anginous symptoms are more frequent in valvular defects,—that is, in distinct valvular defects, especially those of the aorta.* This fact was observed by earlier investigators,—Payer, Germain-Sée, and Romberg. Nothnagel has himself made observations in fifteen hundred cases of valvular defect, and found angina pectoris to occur in only one instance of stenosis, ostii stenosi sinistri, but in that case only two paroxysms were observed in a year; secondly, the clinical diagnosis was not made with absolute certainty; and, finally, there was no post-mortem, so that this case cannot be cited as counter-proof against the view that stenocardic paroxysms ensue in valvular defects of the aorta,—that is, insufficiency of the aorta as well as in stenosis ostii arteriosi sinistri and in the combination of a stenosis and insufficiency.

In another series of cases we see pronounced and severe anginous troubles, especially in disease of the aorta, which does not include the valves, but the aortic walls themselves,—namely, in aneurisms. Aneurisms are a frequent source of anginous complaints, and you must make it your endeavor, when patients complain of the troubles previously described, such as pains in the cardiac region, with oppression and radiating pains in the left arm, to look out for aneurism.

This fact, that anginous difficulties are wont to arise not in valvular defects of the mitral valve, but in those of the aorta and in arteriitis of the aorta, has led to the belief that the occurrence of stenocardic paroxysms must perhaps be explained in a very special manner. It has been stated that the anginous difficulties supervene under other conditions,—namely, in hearts which anatomically are not at all modified. Under such circumstances they form not a typical, pure symptom, but one similar to that of nervous, neurasthenic individuals,—notably not seldom where the subject has heard complaints made of this condition.

Furthermore, this symptom occurs in poisoning, and, first of all, tobacco-poisoning. Tobacco-poisoning does great injury to a wide variety of organs, of which three should

be specially mentioned as more particularly and regularly susceptible to this poison,—*i.e.*, the heart, the stomach, and the eyes. Among the symptoms occurring in the heart of a smoker, the anginous difficulties are to be included.

There are, further, stenocardic complaints which occur reflexly, for example, when occasioned by dyspepsias. There is a so-called dyspeptic asthma, a disease similar in symptoms to angina pectoris, which disappears when the patients diet, take a Karlsbad cure, or otherwise treat the dyspeptic disturbances.

We may now ask, What are the anginous difficulties? Whence do they proceed?

The symptoms of angina strongly recall a neuralgia, and this name was given by Romberg, to whom we owe the first classical description, in his excellent work "On the Functional Neuroses of the Heart." Romberg designates the stenocardia of Heberden as a neuralgia of the cardiac plexus, and we must confess that we in our day have not yet progressed much further in the recognition of this disease: that we must seat the pain in the cardiac plexus, but whether this plexus is alone involved, or whether other places are the centres of the affection,—on that score we are yet in the dark. If we consider the affection of the sympathetic in connection with the sense of expiring, with the anxiety and oppression, which these patients have in their paroxysms, we must assume also an affection in the brachial plexus,—likewise for the purpose of explaining the anæmia and the radiating pains in the one arm, or even in both plexuses. It is beyond doubt that these phenomena—the pains and paræsthesia about which the patients complain—localize themselves in the region of the tracheal plexus, and we must look upon them as irradiated from the cardiac plexus. Whether this radiation takes place in the central nervous system or follows in the peripheral courses, we do not know; that it takes place, however, we may conclude from analogous processes in other nerve regions. Shoulder-pains are mentioned even by Hippocrates, and appear with pains in the liver. We assume in the latter case that the pains leap from the phrenic nerve to the plexus brachialis, and in a similar manner we must explain the pains in the arm when a disturbance of the heart's sympathetic occurs. Whether these pains go out from the heart-muscle itself is a question which we can neither affirm nor deny.

Professor Nothnagel has another theory for the stenocardic pains,—namely, that they are to be regarded in part, or at least in individual cases, as *vascular pains*. It is his conviction that the arteries are capable of the most violent impressions of feeling. Under pathological conditions, violent pains may issue from the arteries; hence the anginous difficulties which we see in aneurisms, and which appear in insufficiency of the aortic valves and in stenosis of the left arterial ostium, must perhaps be referred to disease of the arterial wall. We know to-day that the arterial wall is possessed of sensible fibres. Not only is it known that Pacinian corpuscles, which have been shown by Thoma to exist in the arterial wall, here occur, but we have other physiological and pathological factors which support this assertion. And here we begin to trench on the domain of hypothesis and conjecture.

Many authors regarded the causes of the paroxysms as seated in a suddenly-increasing debility of a heart already enfeebled, acute expansion of the ventricles thus following abnormal influx of blood. As proof, the fact is cited that the attack frequently ensues when the blood-pressure has been suddenly elevated; for example, after bodily movement, after mental excitement, after overloading the stomach, etc. Recent authors have opposed this theory, asserting that cardiac debility was by no means necessary to the occurrence of a stenocardic access, and that this debility is by no means a constant symptom in this condition. For this reason authors have brought forward other theories, and Germain-Sée and Bouchard regard stenocardia as conditioned by acute anæmia of the cardiac muscle. If the heart beats calmly no symptoms occur; as soon, however, as the patients undergo severer exertion they are attacked by pains; there ensues transient anæmia of the heart-muscle, which is combined with excitation of the sensible nerve-elements, and in certain conditions is followed by motoric debility of the heart-muscle.

*Prognosis* of the individual stenocardic paroxysms is varying. Mild attacks may pass over without pronounced subjective symptoms, others may cause the most terrible agonies, and frequently the first access terminates fatally,—at the very moment when the patient is attacked with sudden pain and a sense of oppression he falls dead. In other instances death follows only after the lapse of several hours, with increasing debility of the heart. When the pulse sinks to 28 beats per minute, and even lower, and becomes so feeble as to be scarcely perceptible to the touch,

when the sense of expiring becomes pronounced, and the patient falls unconscious, when, in other cases, an entire trunk of the coronary artery is obstructed by an embolus, preventing access of blood to the ventricles,—then, as you can fancy, a fatal termination may follow an attack; and, in fact, many cases are known in which death resulted from a stenocardic paroxysm. Hence you must be very careful in prognosis, especially when severe attacks follow one another rapidly. Further prognosis, with respect to the fundamental causal relations, need not be discussed. That, of course, depends on the primary disease. Whether an insufficiency of the aorta or an aneurism of the aortal arch, or a sclerosis of the coronary artery be the cause of the stenocardic access, will of course give a varying prognosis *quo ad vitam*, even though all these conditions are incurable. In an angina resulting from sclerosis of the coronary arteries, prognosis is usually difficult. Unfavorable prognosis attaches likewise to stenocardic paroxysms which are combined with fatty heart or occur in individuals of very excitable nervous temperament. If you are dealing with a neurasthenia or with a case of tobacco-poisoning, of which angina is a consequence, or with an angina which has arisen reflexly from stomach-disease, prognosis in most cases will be favorable, since the cause of the attacks is readily curable.

The therapy of angina pectoris is manifold in character, and, first of all, the cause of the primary disease must be sought. A patient smoking six to eight Virginia cigars, or forty to fifty cigarettes a day, you will of course forbid to smoke. Such a patient must give up smoking altogether, otherwise all treatment will be baffled; on the other hand, a complete abstention from smoking will soon effect a cure. A patient, suffering from stomach-trouble and collaterally from stenocardic paroxysms, must first be freed from his stomach-affection. A neurasthenic you will send to neutral thermic baths,—to Gastein or Tüffer or Neuhaus or Johannesbad or Teplitz (Bohemia), etc.,—or you may have to go through a hydropathic cure or treat him with electricity. With all these methods you will have more or less success.

What shall we do now in those cases in which the stenocardic attacks result from endarteriitis of the aorta, when they are the collateral symptoms of valvular disease of the aorta, or of aneurisms, or the consequences of sclerosis of the coronary artery? First calling attention to the therapy to be employed in sclerosis of the arterial system, Nothnagel mentions the regulation of diet, the use of the alkaline waters, and, among medicaments, those which in stenocardic paroxysms may be very well and successfully employed,—the nitrites, referring specially to nitrate of sodium, nitroglycerin, and amyl-nitrite. The nitrites have not long been used in therapy. Amyl-nitrite was first used in angiospasm in the region of the head, occurring in hemicrania. Later the nitrites were recommended in heart-diseases, and, as a result of his extensive experience, Nothnagel warmly recommends this medication. You can and you must apply the nitrites in stenocardic paroxysm, as there is no better remedy, and in most cases you will have quite good results. But, in prescribing these remedies, one must individualize rigorously. It will not do to resort at once to these remedies in every instance of arterio-sclerosis, or in a case of valvular defect or heart-disease, because the nitrites do not act in these cases, and, on the other hand, may prove dangerous. Thus, a young patient from the country came to the author recently suffering from valvular defect, with dyspnœa. The physician administered nitroglycerin, but the condition did not improve, despite treatment prolonged for weeks. The physician obviously regarded the dyspnœic attacks as stenocardia. Naturally, Nothnagel at once suppressed the preparation and began the proper treatment, producing transient improvement.

The nitroglycerin preparations may be used with success in dealing with the severer pains in distinct disease of the heart,—that is, in diseases which involve the arterial system diffusely. The writer has as yet had no experience with their application in thrombosis of the coronary artery, because he has as yet seen no case in which nitroglycerin was given and in which it was subsequently shown that the coronary arteries were diseased. But he recommends these preparations for pains which have their seat in the small arteries,—those painful sensations which characterize typical stenocardic paroxysms. There are some cases in which the preparations are useless; others in which surprising results are achieved. After a very few days, the paroxysms are wont to cease or to become milder and less frequent.

When is nitroglycerin to be employed? and when amyl-nitrite?

Amyl-nitrite you will use in the individual paroxysms themselves. As the access is at times preceded by premonitory symptoms,

the patient succeeds, by the timely inhaling of the amyl-nitrite, which he carries on his person in the form of so-called capillary tubes (pearls), in averting the attack. After a very few breaths, the patients experience a peculiar sensation,—a feeling of heat in the head and of dizziness. These are the symptoms of the beginning action of the remedy, the first evidences of amyl-nitrite intoxication. If the amyl-nitrite has any action at all in the case under treatment, it begins with the first inhalations. But there are cases in which it is of less importance to suppress the single access than to cure the morbid condition. In this respect also are the nitrites of great efficacy. The nitroglycerin is to be prescribed in tablets, which are obtainable in the apothecary shops in two forms of dosage,—namely, ½ and 1 milligramme ($\frac{1}{84}$ grain). Nothnagel usually begins with 1 milligramme, the patients taking one tablet every morning during the first week; the second week he increases the daily dose to two tablets; in the third, to three; in the fourth, to four; in the fifth, to five. He seldom resorts to higher doses, though there are obstinate cases in which larger doses will be borne. Thus, he recently saw a patient who had taken nitroglycerin to the extent of one and a half centigrammes a day, without any disasters. Such large doses you would of course never have occasion to prescribe, because most patients would quickly present symptoms of intoxication. If this should occur with the increasing dosage before mentioned, you will then in a similar manner gradually reduce the doses, decreasing the latter 1 milligramme each week. The author would, however, emphasize the great caution needful in the administration of this dangerous remedy: the patient must be warned never to take more than 1 milligramme per dose, and when you prescribe several milligrammes daily, the patient should be instructed at what hours to take the single doses in order to anticipate intoxication. At times 2 to 3 milligrammes will cause disagreeable results. Some patients cannot bear the preparation at all, and then, of course, this medication must be foregone.

The phenomena following the employment of nitroglycerin are analogous to those which have been mentioned in connection with amyl-nitrite: sensation of heat in the head, congestion, dizziness, and intense headache. On the appearance of these symptoms of intoxication, discontinue the remedy and wait eight days or more; then begin the treatment at its beginning, and increase up to the dose which the patient bore without difficulty, and rest there for several weeks, then reducing the dose. Aside from these unpleasant accidents, the remedy is a most excellent one, and, despite some failures, in most cases good results will be obtained.

If nitroglycerin should not act, then there is nothing left for the treatment of the oft-recurring anginous troubles and their severe pains, save the application of morphine. The latter, however, does not relieve every patient.

In the non-organic forms of angina, it is difficult to decide whether we should apply stimulants or narcotics. If the angina be complicated with fatty heart, then the excitants may be successfully employed. The best effects are yielded by subcutaneous injections of camphor. Other cardiac agents, such as digitalis, strophanthus, and caffeine, have very little or no effect whatever on angina pectoris. Of other therapeutic measures nothing special is to be said, as they do not affect the primary process. You might try, with the proper indications, the application of an ice-bag to the region of the heart, or other measures which will relieve the patient's distress. Different subjects, different remedies. General rules cannot be formulated.

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### *CHANGE OF RESIDENCE IN THE PROPHYLAXIS OR TREATMENT OF TUBERCULOSIS.*

At the Second Congress for the Study of Tuberculosis in Man and Animals, held in Paris from July 27 to August 2, 1891, as reported in the *Medical News* for August 15, 1891, PROFESSOR VERNEUIL read a paper on "Emigration, or Change of Place of Residence, in the Prophylaxis or Treatment of Tuberculosis." The paper was arranged in a series of paragraphs, which may be summarized as follows: 1. Change of residence has a decided influence on the development, rapidity, and termination both of medical and of surgical tuberculosis. 2. The change may be either from the city to the country or from the country to cities; the former exerts a favorable influence upon the course of tuberculous disease, while the latter favors the appearance and progress of tuberculosis. 3. These two facts, well established by clinical observation, are of capital importance as to the prophylaxis and treatment of tuberculosis. Dr. Verneuil insisted that the patient be informed by the physician that by sacrificing

himself and not going to the country he will rapidly reach the end of his disease, while an early change of residence may entirely eradicate the trouble. It is not absolutely necessary that a patient be sent to the country. Should he live in a large city, he may be sent to a smaller city, the location and sanitary condition of which are better than the large and crowded city. A stay in the country is most serviceable in many forms of local surgical tuberculosis, such as ulcers, fistulæ, articular diseases; also in case of latent tuberculosis or of recent operation. When a patient has been sent from the city to reside in the country, he ought not to be allowed to return to his former residence before the results of a careful physical examination indicate that the return can be made with impunity. Unfortunately, fixed rules cannot be laid down, yet a change of residence made in childhood or in adolescence ought to be prolonged until adult life has been reached; a patient ought not to be allowed to return unless his disease has at least been stationary for some time, or has preferably undergone decided improvement.

As is well known, tuberculosis is much more common in cities than in the country. It is also much more rapid and serious in cities, and certainly does not subside in as large a proportion of cases and as rapidly as in the country. We in the city constantly see mild forms of tuberculosis that have a tendency to perpetuate themselves and to reach an alarming intensity, while the contrary is observed in the country. Again, serious tuberculosis is almost always fatal in a city, but in the country cures have been reported; the average life of city tuberculous patients is certainly much lower than that of country tuberculous patients. Finally, Verneuil concluded his communication by emphasizing the great service country physicians can render by forbidding tuberculous patients to live in cities while they still present the slightest evidence of tuberculous disease.

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### *THE THERAPEUTICS AND PHYSIOLOGY OF BLEEDING.*

According to Dr. Pye-Smith venesection is indicated in—1. Cyanosis with distention of the right side of the heart, whether from pulmonary or other obstruction to the circulation. 2. Intense pain of aortic aneurism. 3. Uræmic and prolonged epileptic convulsions. It is contraindicated in fevers, inflammatory disorders, acute pneumonia, hemorrhage, and apoplexy.

The physiology of venesection has recently been studied again by PROFESSOR I. M. DOGIEL (*Vratch*, in *London Medical Recorder*). His experiments were conducted mainly upon dogs, and he comes to the following conclusions: 1. Dogs can survive, without any permanent injury to their health, after having lost from one-seventh to one-half of the animal's total mass of blood at a time. The extraction of two-thirds of the total, however, is invariably followed by death. 2. Blood-letting manifests a sharply pronounced influence on the frequency of the cardiac beats in the case of a moderately large depletion (from one-seventh to one-third of the total quantity of blood), the cardiac action becomes accelerated, while after larger losses it either quickens or becomes slower. 3. Blood-lettings also produce a marked effect on the rhythm and energy of the cardiac contractions (as details). 4. Mild bleedings (made by means of ten or fifteen leeches) either do not alter the arterial tension or slightly raise it. More or less considerable arterial bleedings either do not affect the blood-pressure or are followed by a fleeting initial fall with a subsequent rise, while venesections commonly lower the tension. 5. After moderate depletions "the pulse-wave acquires a periodical character." 6. In the beginning of a bleeding the bodily temperature slightly rises, then sinks about 20° F., and afterwards again gradually rises. 7. On repeated depletions (made every three or four weeks) the bodily weight at first increases—and that sometimes "very considerably"—but later on begins to sink. 8. The same holds true with regard to the numerical strength of red blood-corpuscles. 9. On the post-mortem examination of animals dying from bleedings, the most prominent feature proves to be a fatty degeneration of the heart and other striated muscles, as well as various viscera. In the course of a discussion, Professor A. B. Vogt and Dr. S. M. Schtcherbakoff have stated that, according to their experiments, bleedings do increase not only the number of red blood-corpuscles, but also the proportion of hæmoglobin.—*Medical Record*, July 4, 1891.

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### *PERIPHERAL NEURITIS IN DIABETES.*

In a communication by AUCHÉ, of which a summary is given in the *Neurologisches Centralblatt*, the author refers to the fact that,

although there is strong clinical evidence of the existence of peripheral neuritis among diabetics, no absolute proof that the condition giving rise to symptoms of neuritis is really one of inflammation of the peripheral nerves has as yet been brought forward. This, however, is the view which the writer adopts, and which he proceeds to prove by means of his own observations and those of others, embracing almost every form of disturbance of the nervous system occurring in diabetics. He also cites his histological observations, showing wide-spread inflammatory processes in the peripheral nerves. In the summary of his views of the subject the author states that the upper extremities are attacked with less frequency than the lower, that the affection is mostly bilateral, but may be one-sided, that the functions of the bladder and rectum are unimpaired, and that atrophy and reaction of degeneration are present in the affected muscles. Sensory disturbances, consisting of pains, hyperæsthesia, paræsthesia, or anæsthesia, frequently precede motor troubles, but may accompany them, or may occur alone. Vaso-motor troubles, such as hyperidrosis, œdema, shiny skin, and ecchymosis, may also be present as well as trophic disturbances, such as perforating abscesses, local atrophy of skin, falling off of nails, etc. The loss of knee-jerk which occurs in some cases of diabetes is to be ascribed to neuritis. The author in conclusion refers to the generally-accepted opinion that the nervous symptoms are not at all proportional to the quantity of sugar in the urine. Some researches which he made as to the effect of injections of saccharine solution in the vicinity of the sciatic nerve led him to conclude that sugar was not the active agent in setting up changes in nerve; but that such changes are more probably to be ascribed to the presence in the blood of acetone or of some as yet undescribed chemical substance.—*Lancet*, August 8, 1891.

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### *TREATMENT OF ANÆMIA.*

There are few chronic maladies in which deficient or faulty hæmatosis does not play an important *rôle*.

Indeed, many diseases would more readily yield to therapeutic measures if it were in our power to control this important and complicated function.

In this issue we have endeavored to lay before our readers some reliable observations that may aid them in this direction.

History repeats itself at the present time in the prominence which depletion has acquired in the treatment of anæmia and chlorosis.

The recent experiments of Dogiel on dogs would confirm the practical deductions of Scholz in patients referred to in our columns. Dogiel found that moderate bleeding (by ten to fifteen leeches) does not alter arterial tension or even raise it slightly; that if these are repeated every three or four weeks the patient gains weight, sometimes even considerably, and the number of red corpuscles increases, unless the bleeding is carried to excess or repeated too many times. Moreover, these experiments were verified by Vogt and Schtcherbakoff, who added that the hæmoglobin is also increased.

These results are probably due to the increased tissue metamorphosis which becomes necessary for the renewal of life, as T. King Chambers aptly puts it.

Indeed, it would seem probable that in many chronic diseases a decided impression upon the circulation, innervation and hæmatosis must prove a valuable therapeutic measure if excess is guarded against in a conservative manner.

When the empirical results are so clearly verified by physiological experiment, as appears to be the case in the matter of small bleedings for anæmia, the practitioner may safely resort to this measure, and, noting the result, carefully proceed with it.—*Dietetic Gazette*, August, 1891.

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### *THE DIGESTIVE POWER OF THE ACIDS.*

Various theories have been advanced as to the action of the various acids during the process of digestion. Most of the physiologists believe that hydrochloric acid is the only true acid of the gastric juice, the others formed from the contents of the stomach and mixing themselves with the former. Some even believe that these other acids are hurtful, and that the function of the hydrochloric acid, in conjunction with the pepsin, is not only to peptonize the albuminoid substances, but also to hinder, by preventing fermentation, the formation of lactic, acetic, butyric, and other acids, the presence of which weakens, and may even completely stop, stomach digestion. Alongside of these theories is that of others diametrically opposed, who attribute all the digestive power to the organic acids, and to lactic acid in particular. These results have been arrived at by two methods,—

1, the examination of the digestive action of a natural gastric juice, the acids of which have been previously determined; 2, artificial digestions in glass tubes, the artificial gastric juice being formed by adding together pepsin and the acid, the digestive value of which it is desired to determine.

From his researches in this direction, Dr. Georges drew the following conclusions upon the peptonizing action of the acids of the stomach: 1. Hydrochloric acid is the acid which, combined with pepsin, is commissioned with the peptonization of albuminoid substances. 2. Lactic acid, as well as acetic and tartaric acids, are totally deficient in digestive action.

Thoyer, having had occasion during the course of the year to make some observations upon this subject, had not been able to confirm the latter conclusion. His experiments have been conducted with every possible precaution and with the greatest care, and he believes that the results obtained are entirely trustworthy. These results have been of three kinds,—1, the action of acids alone upon the albuminoid substances; 2, the action of pepsin taken singly; 3, the combined action of pepsin and the acids. Various acids were employed,—hydrochloric, hydrofluoric, sulphuric, nitric, lactic, acetic, tannic, tartaric, oxalic, and citric. These were placed in test-tubes, together with small cubes of hard-boiled white of egg and some filaments of fibrin, and allowed to remain for twenty-four hours in an oven at a temperature of 38° C. At the end of that time the digestions did not appear to have commenced in the tubes containing the white of egg; in the tubes containing fibrin the dissolution of the fibrin was complete, but in neither was found the slightest trace of peptones. This proves that the acids which are contained normally in the stomach, as well as others which may be accidentally discovered there, have not in themselves any peptonizing action. The acid pepsin of Boudault placed in tubes with the white of egg, hard-boiled, and with fibrin, has determined the formation of peptones. If, however, the pepsin is chemically pure, the slightest trace of peptones cannot be found in either the tubes of fibrin or white of egg after remaining twenty-four hours in the oven at 38° C.

In testing the combined action of acids and pepsin, acid solutions of from four or five, ten or twenty, or thirty parts to a thousand have been employed. The pepsin employed was perfectly pure. The experiments were conducted in the following manner: In one series of test-tubes ten cubic centimetres of the precipitated acid solutions were placed, and to these were added two centigrammes of pure pepsin and a cube of one gramme of the white of a hard-boiled egg. In a second series of tubes were placed fifteen cubic centimetres of the same acid solutions, then five centigrammes of pure pepsin and a two-gramme cube of white of egg. Finally, two other series of tubes contained the same quantities of acid solution and pepsin, and one and two gramme quantities of fibrin. The results obtained justified the following conclusions:

1. Hydrochloric acid is the acid that, when combined with pepsin, has the most power for transforming albuminoid substances into peptones.

2. Hydrochloric acid does not alone possess the peptonizing property. With it, but to a much less degree, a large number of acids may, when combined with pepsin, give rise to this transformation of albumen into peptone. Among these acids are sulphuric, acetic, oxalic, tartaric, citric, lactic, and hydrofluoric, which possess this property in different degrees.—*Medical News*, July 18, 1891.

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### *CLINICAL STUDY OF THE CONDITION OF THE HEART IN TYPHOID FEVER.*

Dr. Galliard took careful notes of the anomalies in the condition of the heart during an epidemic of typhoid fever in Paris, in 1880, while he was *interne* under Professor Hayem in the St. Antoine Hospital. He delayed publishing the notes, as he had hoped to have made further investigations on the subject, but circumstances preventing him, he simply gives the clinical notes of the cases as they were taken at the time.

The first case was one of sudden death at the end of the first week of the disease. The patient was progressing favorably; the temperature 37.8° C. in the morning and 40.2° C. in the evening, when he became delirious, and after a short time died. No cause could be found in the post-mortem examination to account for the death.

The second case was one of collapse on the thirteenth day. There had been profuse diarrhœa, and the temperature, from 39.5° C. on the eleventh day, gradually sank to 36.1° C. in the armpit and 37.4° C. in the rectum on the thirteenth. He presented all the appearance of a cholera patient, with cold extremi-

ties, livid face, almost pulseless, and no heart-sounds to be heard. Under stimulating treatment he gradually recovered.

The third and fourth were cases of non-rhythmical intermittence of the pulse, the third exhibiting the intermission only on the day of entry (the eighth of the disease). There was a murmur (systolic?) at the apex and at the base of the heart. In the fourth case, the intermissions continued from the eighth to the twenty-fourth day. There was slight albuminuria.

The fifth was an anæmic girl, in whom rhythmical intermissions occurred after defervescence,—from the twenty-fourth day,—and lasting three weeks. There was also systolic murmur at the apex and in the pulmonary area. In the sphygmographic tracings there occurred an occasional double pulsation. The patient had also a slight relapse.

The sixth case was at first simply asthenic, with feebleness of the apex-beat and of the heart-sounds. There were intermissions on the twenty-fourth day, when the fever was abating. Pneumonia ensued, and the patient died. There was myocarditis.

The seventh case had intractable diarrhœa. At the end of the third week there was feebleness of the heart and faint first sound. Later, at the apex the first sound could scarcely be perceived, while heard distinctly over the sternum. There was also inequality and irregularity in the pulse-beats. The patient died suddenly about the end of the fourth week. Myocarditis and vitreous degeneration of the voluntary muscles were found.

In the eighth case there were systolic murmurs at the base and apex observed on the eighth day of the disease, disappearing on the tenth from enfeeblement, and the patient died on the twelfth. There was myocarditis.

The ninth case was somewhat similar to the eighth.

In the tenth there were anæmic murmurs, that persisted after recovery, and the author points out the necessity to distinguish anæmic murmurs from murmurs arising in cases of myocarditis.

The next three cases are examples of the true cardiac form of typhoid fever. There is a general resemblance in all these cases,—intermissions of the heart's action coinciding with the appearance of the murmurs, or following on the disappearance of the heart's sounds, and feebleness of the apex-beats. Towards the end the heart's action becomes irregular, accompanied by tachycardia, and is premonitory of a fatal termination, and finally syncope, preceding death. There were also complications in the lungs, kidneys, nervous system, etc. In the three cases given myocarditis was demonstrated in each one.

The last two are cases of endocarditis, the murmurs appearing in the one case on the eighth day, and persisting after recovery, and in the other case acute endocarditis was diagnosticated before the symptoms of typhoid fever developed, the murmurs persisting here also after recovery.

The author concludes with a few remarks on the causes of the cardiac phenomena, pointing out that, in addition to the local mischief, affections of various nerve-centres would account for some symptoms. In treatment, he strongly recommends the judicious and bold use of digitalis.—*Medical Chronicle*, July, 1891.

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*THE LOCAL TREATMENT OF DYSENTERY.*

There seems to be in modern medical thought a strong tendency to consider disease as constitutional rather than local, and while not doubting that there are one or more forms of dysentery dependent upon the presence of poisons in the blood, PROFESSOR H. C. WOOD (*University Medical Magazine*, August, 1891) believes that dysentery, as seen ordinarily in this climate, is essentially a local inflammation independent of blood-poison. If this be true, the disease should be especially amenable to local treatment. It is true that the ordinary treatment, which seems not to be local, really owes much of its efficiency to a local influence. Thus, the purgative acts by a purely local depletion; the mercurial or the ipecac, by a local stimulation of the glands involved; while the bismuth spreads itself upon the mucous membranes and by its local action lessens inflammation. Some years ago Dr. Wood published a series of cases of chronic dysentery which showed the marked efficiency of enemata containing half a drachm to a drachm of nitrate of silver dissolved in two or three quarts of water. In acute dysentery, involving the colon high up, he has found enemata containing two or three drachms of subnitrate of bismuth much more efficient than the exhibition of bismuth by the mouth. When the symptoms are severe this local treatment will often be preceded with advantage by washing out the colon with large quantities of water, which he believes are much preferable to hot-water injec-

tions. When the lower part of the colon is affected the beneficial action of ice is especially marked, particularly when the ice is employed in the form of ice suppositories. These suppositories should be rapidly used, one being put into the rectum every three to five minutes, so as to get, for at least half an hour to an hour, the effect of the continuous application of cold.

When tenesmus is very severe, iodoform suppositories are often much more efficient than opium in bringing relief. Another drug which Professor Wood has found especially efficacious is ergot, especially when the passages contain large quantities of blood.

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*THE TREATMENT OF RANULA.*

Dr. B. Hernandez Briz, of the General Hospital, Madrid, writing in *La Andalucia Médica* on ranula in children, mentions a case of one of these tumors which was as large as a hen's egg, and which he cured in a very simple way. Intending to empty it, he inserted a needle of a common hypodermic syringe into it in order to employ aspiration. The contents were, however, evidently too thick to come through such a fine tube. He then filled the syringe with a mixture of 10 parts each of tincture of iodine and water, with 1 part of iodide of potassium, and injected 15 minims of this mixture. Three days later the tumor was decidedly smaller. A second similar injection was given, and when the child was next seen, three days afterwards, the ranula had almost disappeared. Several months have now elapsed, and there is no sign of the return of the tumor.—*Lancet*, August 8, 1891.

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*THE INTERNAL USE OF RESORCIN.*

Resorcin has not been employed to any very great extent as an internal remedy, its use being chiefly confined to external applications. Dr. H. Menche has, however, been giving it in many internal disorders for a number of years, and reports his results in an article in the *Centralblatt für Klinische Medicin*, No. 21, 1891. His first essays were made in cases of cholera infantum, for which he gives a prescription containing from five to seven grains of resorcin in three ounces of simple syrup and water, a few drops of compound tincture of gentian, or, if thought necessary, a minute quantity of laudanum being added. In cholera nostras also good results were obtained, the vomiting being speedily controlled and the patient making steady progress towards recovery. The author holds that resorcin is indicated in all forms of gastritis, in the dyspepsia following indiscretions in eating or drinking, in acute and chronic gastric catarrh, and in rumination. In acute ulcer of the stomach, however, the drug is contraindicated. In the vomiting of pregnancy, in sea-sickness, and indeed in all forms of vomiting, from whatever cause, Dr. Menche recommends resorcin as of undoubted utility. He also used it with apparently good effect as an hypnotic in a few cases. The remedy was given in solution or in powder, the dose for adults being from 1½ to 2 grains every two hours. As an hypnotic, he is in the habit of ordering a single powder of 7½ grains at bedtime. For sea-sickness, he gave 1 or 2 grains in sugar of milk every two hours, and reports some very successful cases of this treatment. Of course, he insists upon the necessity of obtaining a perfectly pure specimen of the drug in order to secure the results desired.—*Medical Record*, July 11, 1891.

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*THE SEAT OF PUNCTURE IN PARACENTESIS ABDOMINIS.*

Trzebicky (*Archiv für Klin. Chirur.*, Bd. xli., Heft 4), in performing paracentesis abdominis at the point of election,—that is, midway between the umbilicus and the anterior superior spine of the ilium,—wounded a large blood-vessel, which gave such troublesome bleeding that the life of the patient was threatened. The hemorrhage was arrested by compression of the common iliac artery. Incited by this experience, and by several reports of fatal bleeding following puncture at this point, Trzebicky conducted an experimental research upon a large number of cadavers. As a result of this he announces the following conclusions:

In a majority of cases, paracentesis performed at a point midway between the umbilicus and the anterior superior spinous process of the ilium is perfectly safe, since neither the epigastric artery nor any large branch of this vessel is liable to be wounded. The artery commonly crosses this line at the junction of the inner with the middle third.

In a certain proportion of cases, however, the epigastric artery or one of its branches lies directly beneath the point of election.

The course of the epigastric artery is sel-

dom exactly similar in the two sides of the body.

Since the artery runs within the sheath of the rectus muscle, its course depends mainly upon the position of this muscle. In case the two recti are separated by abdominal distention, the artery is displaced, so that it lies very near the point of election for puncture. The rectus muscle does not, however, bear a constant relation to the artery. At times, even though the muscle is displaced to the side, the artery lies near the middle line.

Variations in the origin of the epigastric artery seem to have no influence on the course of the former vessel.

The artery is usually accompanied by a single vein.

Paracentesis abdominis should be performed either in the linea alba or in the outer half of the line joining the umbilicus and anterior superior iliac spine. In case the linea alba is selected, it is not important to keep strictly in the middle line, since there is an arterial branch which may be wounded if the trocar is entered, even slightly, to one side.—*American Journal of the Medical Sciences*, August, 1891.

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*PULMONARY PHTHISIS.*

At a meeting of the Pathological Section of the British Medical Association, at its recent meeting in Bournemouth, the discussion on pulmonary phthisis was opened by Dr. J. K. FOWLER with a paper on arrested pulmonary phthisis (*Lancet*, August 8, 1891). He said that the discovery of the tubercular bacillus had settled, so far as pathologists were concerned, the question, which was long discussed, as to whether phthisis was or was not always a tubercular disease. He proposed, indeed, that the term "phthisis" should be abandoned and be substituted by that of pulmonary tubercle. The term "fibroid phthisis" was unsatisfactory, as fibrosis might be due to chronic pneumonia or to the action of various mechanical irritants; that these ought to be classed as cases of chronic interstitial pneumonia, and that fibroid tubercle should be applied to those of tubercular origin. He was not satisfied of the existence of syphilitic phthisis. The so-called stages of phthisis had also to be given up. He proposed that pulmonary tubercle should be classed as follows: 1, for ordinary phthisis the term "pulmonary tubercle" was sufficient; 2, miliary tubercle for cases where the lungs only were affected, or as part of a more general tuberculosis; 3, caseous tubercle, where the process was rapid and might be disseminated, but might affect one lobe only; 4, fibroid tuberculosis, in which there was a special tendency in the tubercles to undergo fibroid change, and was distinguished from ordinary chronic tubercle with cavity formation, fibroid walls, and thickened pleura. The history of tubercle might be very varied. Next he referred to the frequency with which pathologists met with appearances which they regarded as evidence of arrested tubercle, although it was still doubted by many clinical observers. The evidences on post-mortem examination which were regarded as proof of pre-existing tubercle were, 1, pigmented fibroid tubercles, either with or without evident tubercles; 2, caseous areas, or masses with dense fibroid capsule; 3, cretaceous masses; 4, small cavities; 5, scarring and puckering of pleura; 6, local adhesions, with thickenings of the pleura; 7, caseous glands, and so forth. Any of these might be found in persons who had died of diseases which had nothing to do with tubercle, and from his statistics he found that about nine per cent. of the bodies examined showed these, and his statistics agreed with those of other observers. A large number of cases showing arrested tubercle had died of cancer. Although capsules with caseous contents occurred, he had never seen what he would regard as a cavity capable of clinical recognition in which the tubercular process had been arrested. Although some believe they could follow the closing of cavities clinically. He confessed this was beyond his powers. The further question was, What was the proof that the lesions specified really represented arrested tubercle? First, there was the fact that encapsulated caseous masses may be followed by diffuse pulmonary tubercle if the barrier of fibroid tissue were broken down. Then cases occurred in which death was the result of tubercle in other organs than the lungs. Their site at the apex further supported this view, while there was an absence of any other adequate cause to account for the lesions. The method by which arrest took place was by the formation of a barrier of living tissue and fibrous encapsulation. But after the barrier had been formed danger still existed, for the caseous mass might soften and the capsule break down. The caseous or cretaceous mass might be expectorated; and there was always the element of constitutional vigor to be

taken into account. In attempting to estimate the possibility of arrest, regard must be paid to the extent of lung affected. If cavity was present capable of clinical recognition, it was probable that, sooner or later, extension would take place. When bacilli were present in the sputum, the condition could not go on to fibrosis, but these might be present without much constitutional disturbance. Many of the cases of arrested tubercle were probably cases where there had been slight illness, and which, if they had been seen by a medical man at all, had probably been regarded as catarrh of the apex or congestion, and, if there had been hæmoptysis, the blood had come from the throat, and the recovery of the patient tended in the minds of many to confirm this view.

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*THE ORIGIN AND TREATMENT OF GALL-STONES.*

The discussion upon gall-stones at the Medical Congress at Wiesbaden was opened by PROFESSOR NAUNYN, of Strasburg. He remarked that different views were held as to their origin. According to some they form when the bile is saturated with stone-forming material,—cholesterin and bilirubin; or the formation takes place from the precipitation of these substances due to alteration in the chemical constitution and reaction of the bile. These views are not supported by the fact that the percentage of cholesterin in the bile is very constant, and not in any way affected by food changes. It is likewise found in the blood, usually in much larger amount than the bile can contain. Both cholesterin and bilirubin deposit are furnished by the biliary passages, and the chemical alterations described by Thudichum have not been confirmed. In old age the disorder has few symptoms, and remains often unrecognized. In younger individuals, five to six per cent., or even ten to twelve per cent., of all bodies are said to suffer from gall-stones, and the nearer one approaches old age the oftener are they found. Before thirty they are rare, after sixty twenty-five per cent. of the cases occur. In women they occur five times as often as they do in men, and this may be explained by pregnancy, tight lacing, etc., causing stasis in the flow of bile. Atony may account for the frequency in old age. Gall-stones arise rather from an affection of the epithelium of the bile-passages. Recent forms of stone are small and rough, often with a central cavity filled with cheesy matter or fluid. Deposits from the bile take place later. First a layer of bilirubin forms similar to an egg-shell, and the cholesterin is laid down later as a rule. Frequently carbonate of lime is added subsequently, and the stone becomes very hard. A diseased condition of the epithelium of the gall-bladder is always present, called by Meckel "stone-forming catarrh," although desquamative angiocholitis is a better term. The clinical appearance of the disease may be divided into regular typical cholelithiasis and the irregular atypical forms. The latter often develop into carcinoma, and the prognosis is therefore bad. With regard to treatment, so-called solvent remedies have no real basis. Poisonous substances are administered, and find their way into the bile in such small quantities that their presence is with difficulty detected. A similar judgment may be pronounced upon the action of cholagogues, regarded as having an important influence upon the treatment. A well-mixed meal induces a larger flow of bile than any medicinal remedy. The excretion of bile ought rather to be mechanically helped by the wearing of suitable clothing. Antiseptics, such as salicylic acid, etc., are of little use, as indiscretion of diet readily leads to an attack; the food ought to be attended to. Carlsbad salt acts favorably, probably by the excitation of peristalsis. Surgical treatment holds out many possibilities of relief, from the position of the gall-bladder (*Berlin. Klin. Wochenschrift*, No. 15, 1891).—*Practitioner*, August, 1891.

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*A NEW TREATMENT FOR ALOPECIA.*

The form of alopecia for which M. MOTY suggests a new plan of treatment is that which proves at times so obstinate, in spite of all applications, commonly known as alopecia areata. At a recent meeting of the French Society of Dermatologie et Syphilographie, he presented a number of patients who had been subjected to intradermic injections of corrosive sublimate in strength of 2 to 500, and claimed that the treatment had proven very satisfactory, in that the growth of hair over the bald spots had been more rapid than after other modes of treatment. A variety of vehicles had been experimented with, until it was found that an aqueous solution was the best. Several injections of not more than 5 or 6 drops are made around each patch.

Modern investigations tend to show that there is at least one variety of alopecia, occurring in rounded plaques, which is due to

the invasion of a micro organism, and the observations of Von Scholen, Thin, Robinson, and others in this field have rendered it scarcely justifiable for an author at the present day to attribute the affection to neurotic causes in all cases. If, as Robinson maintains, the organisms are situated deeply in the tissues of the scalp or other hairy portions of the skin, then the plan of treatment here suggested is eminently rational, and ought to be as successful as it is claimed.

It must always be remembered, however, that the disease is of a most erratic nature, and while at times it resists all our efforts, at others it shows a tendency to rapid and spontaneous recovery.

Besnier relates an instance in point, where a patient was treated in his service continually for two years without success. He was then sent to a colleague who continued exactly the same treatment, and a cure was promptly effected.—*Medical Record*, August 15, 1891.

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### *TREATMENT OF ALBUMINURIA AND NEPHRITIS DURING PREGNANCY.*

Dr. A. Mijnlieff gave an address on the "Treatment of Albuminuria and Nephritis during Pregnancy" at the Third Physical and Medical Congress recently held in Holland (*Geneeskundige Courant*, May 10, 1891). He says that, taking into consideration the predisposition to renal affections during the period of pregnancy, prophylactic treatment must in cases be adopted, and with greater circumspection where there has been any antecedent infectious malady. In all cases of chronic nephritis, where the danger to the mother is great, and the chances of life to the fœtus small, the period of parturition should be anticipated, while as a precautionary measure abstention from intercourse or artificial occlusion of the uterine orifice should be recommended. With regard to the treatment itself, the line must be drawn between a simple albuminuria and albuminuria the outcome of a more serious renal affection. In the former a well-regulated diet, with avoidance of an excess of nitrogenous foodstuffs, is of the first importance; all nourishment tending to congestion of the kidneys must be avoided, and a careful functional regulation of the skin and intestinal canal insisted on; light saline purgatives may be administered, and in anæmic patients iron may be given with advantage. In nephritis during pregnancy, where the renal affection is discovered during the early months, abortion may be induced where the prognosis is likely to be a grave one. Dietetic treatment will, however, in such cases also be found of great value; the milk treatment strictly followed has given admirable results. Milk may be given raw or boiled, cold or warm, according to the patient's fancy, but it would be well to habituate the patient to this absolute milk diet gradually, as the distaste for it at first is great. As a consequence, an increased diuresis and disappearance of albumen are obtained, while the best guarantee is afforded of the absence at term of uræmia and eclampsic symptoms. A diaphoretic treatment, if indicated, may be adopted either by warm baths or the pack, while the subcutaneous injection of pilocarpine (the heart's action being closely watched) will prove of much benefit. In urgent cases diuresis may be induced by the salicylate of theobromine, as advocated by Gram and Schroeder. Venesection, recommended by Charpentier and Peter, though regarded by most with scant sympathy, is of value when urgent symptoms have to be dealt with. The above-mentioned means are available either for acute or chronic nephritis. As to the question of induction of premature labor, its advisability must be considered (1) in the interest of the mother and (2) in that of the offspring. Distinction must be drawn, in considering the dangers to the health and life of the mother, between the acute and chronic forms of nephritis. In the former, where renal complications occur in a healthy woman during the earlier months of pregnancy, taking into account the serious prognosis, abortion must be induced. This complication is, however, of rare occurrence, as the nephritis usually declares itself later in the pregnancy. When renal symptoms first come into prominence during the second half of pregnancy, notably about the sixth or seventh month, premature parturition is not to be attempted unless grave indications, such as dropsy, dyspnœa, etc., supervene. In cases of chronic nephritis, consideration being given to the grave dangers that beset the mother, through rapid development of the complication as well as the inclination there exists in these cases to hemorrhage and abortion, coupled with the small chances of life for the fœtus, abortion must be induced as speedily as possible. Should a case of chronic nephritis come under observation only in the later months of pregnancy, premature labor must be induced as early as possible, every chance of life being given to the fœtus, while if ear-

lier pregnancies have afforded evidence that intrauterine death has occurred at a definite period, labor may be induced some time earlier than this period.—*British Medical Journal*, August 8, 1891.

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*ANTISEPTICS IN THE TREATMENT OF TYPHOID FEVER.*

Since the germ-theory of disease has become established upon a firm scientific basis, the idea of treatment directed towards the neutralization of these specific organic poisons has naturally arisen. Although much progress has been already made in this direction in the treatment of many medical affections, it must be admitted that the results obtained in surgical practice are of far more practical importance than those arising from the use of antiseptics in non-surgical practice. To appreciate this we have only to glance over hospital statistics, and find that whereas the mortality of all grave surgical procedures is immensely less, the same cannot be proven of those medical cases in which a living organism has been shown to be the essential cause. The cause of this difference in statistics is obviously the comparative ease of application of antiseptic treatment in surgical practice, and the insurmountable difficulties which at present prevent its use in cases where the seat of infection is the intestinal canal and the blood itself.

While the ideal antiseptic has yet to be discovered, much good work has been done in this direction by many prominent clinicians; and perhaps no disease has been more vigorously attacked by antiseptic remedies than typhoid fever. Indeed, it may be affirmed with some truth that the idea of maintaining, as well as possible, intestinal antisepsis in this disease occurs to almost every practitioner of the present day, and in the opinion of some it is the method by which the best results can be obtained. No agent has yet been discovered which can affect the poison of typhoid fever in the circulating blood without being equally poisonous to the patient, so that at present the questions are: Can we disinfect the intestinal canal and thus favorably influence the course of the disease? Does this method of treatment give better results than when other measures are adopted?

With the numerous modes of treating typhoid fever now in vogue, the answers to these questions cannot be authoritatively made at present, but it is generally admitted that we possess certain antiseptic remedies which are capable of making the stools less offensive, of limiting somewhat the duration of the fever, and of lessening the abdominal tenderness and meteorism. Such agents are very commonly employed as adjuncts to other methods of treatment. But the effect of a *purely* antiseptic treatment upon the mortality needs further observation.

The maintenance of intestinal antisepsis depends largely upon the diet, which should be of such character as to be readily absorbed, and so contribute as little as possible to fermentation. The quantity of food is also most important, and no more should be given than can be readily assimilated, for, unless this is done, the food collects in the intestines, rapidly undergoes fermentation with the production of noxious solids and gases, and painful tympanites results. For this reason milk, diluted with lime-water, light watery soups, and proper amounts of pure water would seem the rational diet, since they are readily assimilated, and furnish plenty of liquid to carry away the waste products of tissue changes. Such a diet leaves a minimum of residue in the intestines, and hence is more suitable when intestinal antisepsis is aimed at.

The cheap drugs which have been lately used to promote antisepsis in the intestinal tract are naphthol, thymol, salicylate of bismuth, mercury in some form, carbonate of bismuth, chlorine, hydrochloric acid, turpentine, sulphide of carbon, boric acid, benzoic acid, carbolic acid, quinine, hydro-naphthol, and a number of others. The reported accounts of the use of any of these agents as an exclusive mode of treatment are too meagre to admit of any intelligent comparison of their relative values. They are all used for the same purpose, and none of them has proved entirely acceptable. Dr. J. Burney Yeo, Professor of Clinical Therapeutics, at King's College, London, has had very marked success with a mixture of chlorine and quinine, and in a late lecture (*Lancet*, April 18, 1891) he highly recommends it, and strongly urges the expediency of some means being always adopted to secure as perfect an antisepsis as possible in the intestinal tract. To those interested in this subject, this lecture is well worth careful reading, as it details the history of the application of antiseptics in typhoid fever, as well as gives his own experience. Dr. J. Mitchell Clarke has experimented favorably (*Practitioner*, December, 1888, and July, 1890) with β-naphthol and hydro-naphthol. His results

were, 1, "reduction of the average duration of the fever; 2, less offensive stools; 3, less abdominal distention; 4, early cleansing of the tongue and less dryness of mouth and lips; 5, absence of albuminuria; 6, convalescence more rapid and strength less reduced; 7, less risk of propagation of the disease; 8, diminished tendency to secondary complications." Dr. Yeo states, in his lecture above mentioned, that M. Maximovitch prefers $\alpha$-naphthol to $\beta$ naphthol, because it is three times less tonic, yet prevents the development of the typhoid bacillus when used in the proportion of 1 part in 10,000; and also that Dr. Moncorvo (*Satillite*, February, 1890) has given $\beta$ naphthol to children in doses of gr. xv to gr. xxx, and that such doses were tolerated perfectly.

Liebermeister (Von Ziemssen's "Cyclopædia of Practical Medicine") urges the claims of mercury and iodine, giving the latter dissolved in a solution of the iodide of potassium. Mercury he employs in the form of calomel. He found the mortality less, in two hundred cases treated by calomel, than in a large number treated without it.

Experiences of leading physicians might be multiplied, but as they are too widely different as regards the conditions surrounding their cases, and the drug employed, to secure intestinal antisepsis, it is impossible to more than gain a general idea of the value of this treatment. That the idea of intestinal antisepsis is rational all admit, and it also may safely be said that the experience already obtained from the use of antiseptics is highly encouraging. The end to be obtained is most desirable, for by influencing the local condition of the gut the general toxæmia seems apparently proportionately lessened. Only time and an experience long enough to permit of the comparison of reliable statistics of the use of the several remedies lately brought forward can settle the question as to the best mode of securing the minimum amount of septic fermentation in the intestine, and, as has already been said, the kind and quantity of the food will prove an important factor towards this result. In this connection, the use of pepsin suggests itself, to complete the imperfect gastric digestion, and it is routinely given by Dr. W. H. Thomson, at the Roosevelt Hospital, New York, in conjunction with dilute mineral acids.

Since it has been proven beyond doubt that antiseptics play a most important *rôle* in the modern treatment of typhoid fever, it becomes every practitioner of medicine to consider carefully the means he shall employ to fulfil the indication which always is present in this disease. No one drug or mixture can be solely recommended for this purpose, and, further, in many cases certain remedies are contraindicated by the existing conditions of the stomach, but in all cases where no such contraindication is present, an antiseptic of known value should constitute a part of the treatment, for its *specific effect* upon the bacillus. The favorable experience of chlorine and quinine by Dr. Yeo, of calomel and iodine by Liebermeister and others, and the naphthol and hydro-naphthol by Clarke (as well as the reported value of many other antiseptic remedies), allows of considerable latitude in the choice of the drug to be employed. It is to be hoped that these antiseptics will be given a larger trial in the hospitals of this country, side by side with other modes of treatment, including the treatment by cold-water baths, as introduced by Brand, and, it is needless to say, these statistics, obtained in this way from single large hospitals, will be most valuable in determining which drug, of those already employed, will most adequately fulfil the purpose of limiting to a minimum the production of toxic ptomaïnes, or similar substances, and thus prevent their introduction into the already poisoned blood.

All our knowledge of the pathological conditions which exist in typhoid fever suggests persistent effort towards this line of treatment as being the most rational and direct method of combating the disease, and although the remedies as at present used may fall far short of perfection, still, as has been said, the experience of acute observers proves how much room there is for hope in this direction.

Enough proof of the efficacy of the antiseptic treatment of typhoid fever is forthcoming to warrant the assertion that it should be given a high place among the measures usually employed.—*Medical and Surgical Reporter*, July 18, 1891.

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### *DIURETIN IN THE TREATMENT OF DROPSY.*

It would seem as if any remedy that stimulated the renal epithelium might be regarded as a specific against dropsy. But there can be no infallible diuretic drug, since in some cases of general œdema the epithelium—*i.e.*, the secreting structure itself—is at fault. The alkaloids caffeine and theobromine are diuretics of great power; but the former has

the drawback of primarily increasing arterial tension by its stimulation of the vaso-motor centres, and thus may even diminish the urinary secretion in cases in which the intravascular blood-pressure is already too high. In large doses, however, this action upon the nervous system becomes subordinated to its influence upon the kidneys, and free diuresis effected. Still, an objection to large doses of caffeine—say 5 to 10 grains three or four times a day—lies in the nervousness and insomnia of which patients are apt to complain. Moreover, the system becomes speedily accustomed to its effect, necessitating the employment of increasing doses. For this and other reasons, Professor von Schroeder, of Strasburg, was led to experiment on animals with theobromine, and his results were reported at the Congress of Scientists, held in Heidelberg, September, 1889. He also had a paper on the subject in the *Therapeutische Monatshefte*, July, 1890. His conclusions were that theobromine is a powerful stimulant of the renal epithelium, and that this action is not preceded or accompanied by any effect upon the nervous system, as in the case of caffeine. At his suggestion a series of clinical investigations was undertaken by Dr. Christian Gram, in his hospital service at Copenhagen. They were reported in the *Therapeutische Monatshefte*, 1890, No. 1. Additional clinical studies were communicated by Dr. August Hoffmann to the Heidelberg Medical Society on July 1, 1890. Recently also Dr. Koritschoner, of Von Schrötter's clinic, at Vienna, has given the remedy a trial in thirty-eight cases of general dropsy. Twelve were due to renal disease, twenty were of cardiac origin, three from cirrhosis of the liver, two from tuberculosis of lungs and serous membranes, and one from hepatic cancer (see *Boston Medical and Surgical Journal*, October 30, 1890; also THERAPEUTIC GAZETTE, December 15, 1890). These observers are unanimous in praise of the remedy, and seem to regard it as without an equal. In the greater number of Gram's cases all other cardiac diuretics had been tried without avail, whereas the theobromine acted promptly and powerfully, except in a few instances, when it failed to be absorbed, or the renal epithelium was too greatly destroyed to respond to stimulation. Hoffmann's trials of it were confirmatory of Gram's.

The remedy acted promptly and energetically in all but five of Koritschoner's thirty-eight cases, and these were so far gone that death supervened a few hours after their admission to the hospital. Two cases of acute scarlatinal dropsy were benefited in a most gratifying manner, thus showing theobromine to be free from irritating effect upon the kidneys.

There are two objections to the employment of the alkaloid itself,—viz., its scarcity and consequent cost, and chiefly its almost absolute insolubility, even by the stomach. The latter difficulty was overcome by Dr. Gram, who found that, united with nearly an equal proportion of salicylate of sodium, it became readily soluble and easily absorbed. It is this salt—sodio-theobromine salicylate—that has received the appellation of diuretin.

The remedy is readily soluble in warm water, and had better be administered thus or in pill form, since, if exposed to the air, as in powders, it undergoes change, from a setting free of the alkaloid, thus being rendered insoluble. As the daily dosage is large,—from four to eight grammes (sixty to one hundred and twenty grains) in the twenty-four hours,—it is best given in divided doses, and therefore should be ordered in the strength of fifteen grains to the ounce of warm water, and of this a tablespoonful is taken every three or four hours. Its taste, which one patient likened to a weak solution of soft soap, may be disguised by the addition of some aromatic oil. It is well borne by the stomach apparently, as none of my patients have complained of discomfort following large and frequent doses.

In the *New York Medical Journal* for July 11, 1891, DR. ROBERT H. BABCOCK reports four cases of different forms of dropsy in which the administration of diuretin in the dosage above referred to produced entire removal of ascites and general dropsy, and which seemed to confirm the most enthusiastic statements which have already been published as to the diuretic properties of this drug. Dr. Babcock summarizes his conclusions derived from his experience with this remedy as follows:

1. Diuretin is a diuretic of great power and promptitude, suitable to all forms of dropsy.

2. Not increasing arterial tension, it is likely to succeed where digitalis, caffeine, and their congeners fail.

3. In cases of cardiac dropsy, with great feebleness of the pulse and arhythmia, it will strengthen and regulate, rather than depress, the heart's action.

4. It appears to cause no irritation of the stomach or kidneys.

5. It requires to be given to the extent of from ninety to one hundred and twenty grains daily, and preferably in small doses frequently repeated.

6. It is best administered either in solution in warm water or in gelatin-coated pills, since, if exposed to the air in powders, it undergoes change, with a precipitation of much of the insoluble theobromine.

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### *THE NATURE AND ACTION OF THE ACTIVE PRINCIPLES OF TUBERCULIN.*

Koch's remedy for tuberculosis is a glycerin extract of pure cultivations of the tubercle bacillus, the remarkable properties possessed by it, unfortunately for evil as well as for good, are, according to Koch, due to one active principle present in such small quantity as to constitute probably little more than a fraction of one per cent. of the whole. Numerous observers in their studies of this substance have found many points of divergence from the description of its action and properties published by Koch. One of the latest and most important of these criticisms was published in the *British Medical Journal* for July 25, 1891, by DR. WILLIAM HUNTER, who there gives a long account of his study of the chemical nature of tuberculin, with accounts of its action and properties. The following is a summary of his conclusions:

1. Tuberculin owes its activity not to one principle, but to at least three, and probably more, different substances.

2. Its action in producing local inflammation, fever, and general constitutional disturbance is not a simple but an extremely complex one.

3. Its active ingredients are of the nature of albumoses, alkaloidal substances, and extractives. The action of these is in certain instances antagonistic.

4. Its remedial and inflammatory actions are connected with the presence of certain of its albumoses, while its fever-producing properties are chiefly associated with substances of non-albuminous nature.

5. The albumoses are not lost by dialysis, the latter are. By the adoption of suitable methods it is thus possible to remove the substances which cause the fever, while retaining those which are beneficial in their action.

6. The fever produced by tuberculin is thus absolutely unessential to its remedial action.

7. The same holds true, the writer believes, with regard to the inflammation produced by it. Inflammation is certainly not absolutely necessary for the manifestation of its remedial action. It is in some cases, however, beneficial, and helps, under certain circumstances, the action of the remedial substance.

8. The difference between the substance which causes the inflammation and the one which possesses the remedial properties as regards their action is not merely one of degree. The local reaction which occurs with small doses of the former is much greater than that producible by large doses of the latter.

9. Nevertheless the remedial substance has as truly a local action as the one which tends to produce inflammation. This is evidenced in two ways,—first, by distinct and obvious shrinking of the tuberculous tissues; and, secondly, increased scaling, pointing to the existence of a certain amount of deep local congestion. In some cases this congestion becomes obvious by slight superficial reddening.

10. The power of favoring recurrence, which tuberculin possesses, is connected partly with the non-albuminous substances removable by dialysis, possibly also with a portion of the albumoses present.

11. The remedial substance resists the action of high temperatures. Its action is, however, lessened if exposed to a temperature above 70° C. in a dry condition. Its properties, moreover, can be altered in other ways, sometimes, for example, materially by dialysis. This change is not due to the passage of the substance through the membrane, but to changes occurring in it within the dialyzer. Its sensitiveness in this respect the author regards as one of its chief features, and causes its preparation to be attended with special difficulties.

12. Both it and the albumoses present probably belong to the class of proteids,—albuminous substances derived from the plasma of the bacilli themselves, and not merely formed by the action of these bacilli on the surrounding tissue.

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### *THERAPEUTICS OF SYPHILIS.*

DR. E. KREIS, of Zurich, says that, in spite of new methods and new remedies, we are still far from an ideal treatment of syphilis, one which will remove completely the syphilitic virus from the organism without injury.

He first discusses the so-called abortive treatment by excision of the chancre.

Neisser believes that it is possible to check the outbreak of syphilis by excising the chancre. Jullien's belief, based upon a series of experiences, is that syphilis may be delayed in its course, or at least weakened, by excising the chancre. In one of his cases the patient had a chancre removed in 1880; he remained under careful observation free from syphilis for four years, and then died of typhoid fever. Another patient, who was operated on in 1881, has remained healthy to the present day. A third patient became reinfected with syphilis seventeen months after the first primary sore had been excised. Leloir's first experience led him to declare excision of the chancre useless, but upon investigating the question afresh he obtained positive results. The following case is especially noteworthy: He excised a chancre in 1884, twenty-four days after the coitus in which infection had occurred. Subsequently there was slight cicatrization, with no induration, no swelling of the glands, and later no symptoms of syphilis. The very careful observation of this case extends to the year 1888. On the other hand, Neumann, Ricord, and Von Sigmond do not favor the method, and Ricord declares that the destruction of the primary sore is absolutely useless. Unna and Auspitz, however, have revived the treatment. Kreis thinks that at present we must conclude that excision of the chancre cannot abort syphilis. Nevertheless, he regards the operation not only justified, but indicated for certain cases,—if only to give a positive answer to the question and to adduce proof that the chancre is to be regarded as the local action of the infection and not as the expression of the general disease. The indications for the operation are: 1, absolute certainty of diagnosis; 2, operation as early as possible, before the lymphatic glands have been infected; 3, that the chancre should be typically formed and appear completely separated from the surrounding parts, so that it may be removed *in toto* without infecting the neighboring tissue.

A second question in dispute is as to the time when the general treatment of syphilis should begin,—whether with the occurrence of the primary sore, the so-called preventive treatment, or with the occurrence of the secondary symptoms. Fournier, Mauriac, Jullien, Schwimmer, and others hope, by early mercurial treatment of the patient, to prevent secondary symptoms; or, if these should set in, to make the course milder. Doutrelepont, Köbner, Kaposi, Unna, and Neisser, on the other hand, take the position that the primary treatment generally fails to defer the timely appearance of the secondary symptoms, and that the latter often occur more obstinately and severely. Kreis agrees with Neumann in opposing early treatment. He says he has seen after it extremely obstinate affections of the mucous membranes of the mouth, and the occurrence of the premature iritis, skin affections being absent. He thinks early treatment appropriate only for large chancres difficult to heal.

A third question of great importance is as to the most appropriate form and combination of mercury in the treatment of syphilis. Kreis concludes that mercurial ointment gives the greatest therapeutic effect with the least detriment. It may be employed as in the usual inunction "cure" or in the form of a soap containing metallic mercury, or in the form of a mull, as recommended by Unna. They are all only different methods of applying mercurial ointment, and are nearly uniform in their activity. The use of the *unguentum cinerei* represents the best, most active, and most permanent "cure."

How long should the mercurial treatment continue? Fournier especially has called attention to the fact that those cases which were not sufficiently treated, or which were treated for too short a time, were often followed by severe tertiary manifestations. He therefore thinks that the treatment of syphilis should be continued for at least three or four years; recently he has made the time still longer. Lang, Diday, Caspary, and Köbner combat the long-continued mercurial treatment, and maintain that such treatment leads to serious injury to the organism, both to the digestive organs and the central nervous system. Neisser is in favor of long-continued, but intermittent, treatment. Kreis regrets that we lack statistics of cases extending over a long time; these would give us the necessary light by which to decide the question. All cases, however, should not be treated according to the same plan.

He concludes that, though the present treatment of syphilis does not enable us to cure every syphilitic permanently, yet we can by proper treatment always get rid of the symptoms again. We must in most cases consider syphilis an absolutely curable disease, and always a relatively curable one (*correspondenzblatt für Schweizer Aerzte*, No. 5, 1891).—*Medical News*, July 18, 1891.

### *THE ACTION OF SOME RECENT HYPNOTICS ON DIGESTION.*

Having observed that certain gastric diseases—such as distaste for food, flatulence, vomiting, and diarrhœa—occasionally follow the exhibition of chloralamide, paraldehyde, sulphonal, and urethan, DR. JOHN GORDON undertook a series of investigation to determine their action of digestion, and his results are published in the *British Medical Journal* for July 18, 1891.

These investigations, which, it must be observed, attempt to deal only with one of the phases of digestion, may help to throw some light on the action of the drugs on the ferment. It has to be remembered that they may have a further action on gastric secretion, and that the whole of the muscular and nervous mechanism of the stomach may be influenced directly or indirectly by them. At any rate, paraldehyde does not seem to interfere with digestion, because of its influence on the peptone-forming power of pepsin ; for when employed both in large and small quantities, it distinctly accelerated the digestion of the fibrin.

To ascertain this, the method employed was that of Grützner, and consisted in preparing fresh fibrin from blood, which was carefully washed with cold water until the washings were free from blood color; the washed fibrin was then allowed to stain in a weak ammoniated solution of carmine for twenty-four or thirty-six hours; the stained fibrin was again washed in a slowly-running stream of cold water till the washings were colorless. The rate and amount of digestion were estimated by the liberation of color from the stained fibrin, and by its diminished bulk. Four test-tubes of equal size and shape were selected ; No. 1, which was the control test-tube, as a rule, contained half a gramme of stained fibrin, two decigrammes of pepsin porci, two cubic centimetres of two per cent. hydrochloric acid, and fifteen cubic centimetres of water. The other three test-tubes contained, in addition to the preceding ingredients, varied and graduated quantities of the drug under observation. The fibrin was suspended in the test-tubes either loosely tied by silk threads or enclosed in small muslin bags. The set of test-tubes were then placed in an incubator, the temperature of which was kept as nearly as possible to that of normal body heat. The liberation of color and the bulk of fibrin were recorded from time to time.

His experiments show, as regards chloralamide, that—

1. Large quantities retarded the digestion of fibrin in the ratio of the quantity employed.

2. Small quantities, for example, up to .02 gramme, did not have any marked influence either in accelerating or in delaying the digestion of fibrin.

3. Putrefaction was not retarded by either large or small quantities.

In the case of paraldehyde—

*a*. Large quantities considerably accelerated the digestion of fibrin, and that the rate of this acceleration was distinctly in ratio with the quantity used.

*b*. Small quantities also increased, but to a less degree, the digestion of fibrin.

*c*. Putrefaction was presented by the larger quantities of paraldehyde, and was delayed by the smaller quantities.

*Urethan.*—The result of experiments, which were conducted in similar manner, showed that—

*a*. Strong solutions—that is, .5 gramme, .25 gramme, .175 gramme—delayed digestion; that the stronger the solution the greater was the delay.

*b*. Weak solutions—that is, one, two, and three milligrammes—neither delayed nor accelerated digestion.

*c*. Neither strong nor weak solutions retarded decomposition.

*Sulphonal.*—Similarly-conducted experiments showed that—

*a*. Strong solutions, saturated or half saturated, considerably delayed digestion, and that the stronger the solution the greater was the retardation.

*b*. Weak solutions—such as one-sixteenth or one-eighth of a saturated solution—had little effect either in accelerating or delaying digestion, but when a solution of one-fourth of a saturated solution was employed delay in digestion took place.

*c*. Strong or weak solutions had no marked effect in retarding putrefaction.

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### *THE TREATMENT OF CHLOROSIS BY COPPER.*

In an article upon this subject, LIEGEOIS (*Rev. Gén. de Clin. et de Thérap.*, January 7, 1891) reports the success obtained in the treatment of chlorosis by the administration of copper. The author has followed the method employed by Luton in the management of

tubercular disease by the same drug. The conclusions previously arrived at by Pecholier and Saint Pierre are referred to. These writers, from an experimental study with verdigris upon the lower animals, and from observations made on individuals working in the manufacture of this salt, affirmed (1) that a daily and slow absorption of the drug favors the development of corpulence; (2) that women employed in verdigris-works are not subject to chlorosis.

These conclusions, apparently thoroughly reliable, led Liegeois to try the remedy in the treatment of the malady in question. The results have been highly encouraging.

The drug was administered to thirty chlorotic, *not anæmic or pseudo-anæmic*, women, as in all of them the chlorotic disorder was pronounced. The author employed the aceto-phosphate of copper, in pill form, as recommended by Luton for tubercular cases. If the disease was accompanied by amenorrhœa, menorrhagia, or leucorrhœa, three-fourths to one and a half grains of newly-prepared powder of ergot were added to each pill. One or two pills were given twice daily before meals, and in the intervals fifty to thirty drops of the tincture of nux vomica were administered. At the end of the meal a teaspoonful of the syrup of mint, with medicinal hydrochloric acid, was ordered also. This constituted the whole treatment.

The patients followed this medication uninterruptedly for one, two, and three months, without evincing any deleterious effects. No nausea or vomiting, no gastralgia, or any exaggeration of a previously-existing chlorotic gastralgia, was ever noticed. In the course of the whole treatment there were taken 60, 90, 100, 150, and 200 pills of the aceto phosphate of copper, according to the following prescription:

℞ Neutral acetate of copper, gr. ⅙;
Crystallized phosphate of sodium, gr. ¼;
Powder of licorice and glycerin, q.s.
Mix and make one pill.

—*Archives of Gynæcology*, August, 1891.

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### *THE USE OF ACETANILIDE IN THE TREATMENT OF ACUTE AND CHRONIC BRONCHITIS.*

If there is any one disease whose causation, it might be supposed, would not be attributed to the action of any specific organism, but clearly due to the action of cold, that disease would undoubtedly be catarrhal bronchitis, and yet in the *Lancet* for June 23, 1891, MR. E. F. GRÜN endeavors to prove that bronchitis is the direct outcome of infection by a specific organism. He writes that his attention was first drawn to the existence of this organism by the constancy with which he detected it in the sputum of individuals suffering from bronchitis, which he had examined to determine the absence or presence of the bacillus tuberculosis. He soon, he states, was able to satisfy himself as to the presence of the characteristic organism in every case of bronchitis which came under his notice. He then succeeded in isolating the organism by the gelatin plate cultivation process, and he now describes the nature of the organism, the character of the experiments carried out in cultures and inoculations, and describes the substances which have been capable of destroying the organism within and without the body.

On examining the sputum of any case of acute bronchitis, the expectorated matter is found to consist of pure mucus, embedded in which are pus-cells, epithelial cells, leucocytes, and granular material of a highly-refracting nature, probably oily. In and among the pus-cells, upon the epithelial cells, and lying free in the mucus, are a number of bacteria. When not contaminated by secretions from the mouth these bacteria consist of one easily distinguishable species, constant in size, shape, and peculiarity of staining. This bacterium is a bacillus, in that its length is about twice its breadth, and from observation in cultivations appears to give off spores. Its length is very constantly about two micro-millimetres when met with in preparation from sputum. On cultivation, however, alterations take place in its morphological character, which will be subsequently described. The organism is constricted in the centre very like bacillus fluorescens. The two parts on either side of the constriction are rounded. The organism stains readily with gentian violet and methylene blue; it occurs singly, in pairs, and in clusters or zoogloea, as before remarked, lying free, and in the substance of leucocytes, in many of which the organism can be seen, apparently causing some coagulation of the leucocyte protoplasm around it. Some leucocytes have more than one bacillus in their interior, a coagulation of the protoplasmic matter taking place around each bacillus and causing the leucocyte to split up, each surrounded bacillus forming a cell, impossible to distinguish from a pus-cell, and

ultimately losing itself in a granular degeneration. The leucocytes thus absorb a certain number of the bacilli; the absorbed bacilli cause a coagulation of the protoplasm of the leucocyte, and presently a granular destruction of the leucocyte. Upon epithelial cells the bacilli produce no change, but are simply collected in numbers upon the surface of the cell.

Organisms when mounted on cover glass, with a little gentian violet to color, exhibit active movements under one-twelfth of an inch. The movements seem to consist of contraction and expansion of organism; a mobile movement in varying directions; a swaying movement, one end of the organism being fixed; a twisting movement on the long axis of the organism, giving a screw-like outline to the organism. Cultures a month old exhibit the organism somewhat altered in character, and give rise to a suspicion that the culture might not be quite pure; but plate cultivation gave a reversion to the original form of organisms as seen in sputum and as seen in the tube cultures of twenty-four hours' growth. The alteration in form consisted in an increase in length of the organism and a loss of the characteristic central constriction in a large number of the individual bacilli of the thirty-day-old culture. The reaction of the scum produced is strongly alkaline.

*Cultivation.*—The organism grows readily upon nutrient gelatin and agar-agar, at a temperature between 5° C. and 40° C. A temperature above 40° C. retards growth; above 50° C. the organism is destroyed; while a temperature below 5° C. appears only to arrest the growth, for on the temperature being raised it resumes its growth with unimpaired vigor. The growth takes place upon the surface of the nutrient media as a flocculent film, but gradually penetrates the interior of the agar-agar nutrient. The surface of the medium upon which the organism grows gives a strong alkaline reaction; a gas of a sour and most offensive odor is given off. The growth is apparent twelve hours after inoculation of nutrient media. When grown upon nutrient gelatin the gelatin is liquefied.

One decigramme of each of the following substances was added to a tube of nutrient agar-agar and also to a tube of nutrient gelatin. The tubes were then inoculated from a subculture of the organism; other tubes were inoculated as control experiments, with the following results:

| | |
|---|---|
| Iodoform | Free growth in 7 days. |
| Carbolic acid (¼ per cent.) | Free growth in 7 days. |
| Carbolic acid (1 per cent.) | Free growth in 10 days. |
| Carbolic acid (2 per cent.) | Free growth in 28 days. |
| Carbolic acid (10 per cent) | Free growth in 50 days. |
| Menthol | Free growth in 3 days. |
| Thymol | No growth. |
| Boric acid | Slight growth after 10 days. |
| Aniline chloride | Free growth in 4 days. |
| Acetanilide | No growth after 40 days. |
| Untreated tube | Free growth in 24 hours. |
| Liq. hydrargyri perchloridi | No growth after 60 days. |

It was thus found that a free growth of the organism took place upon tubes of nutrient material to which iodoform, carbolic acid, menthol, and aniline chloride had been added in considerable quantity. But tubes to which acetanilide and liquor hydrargyri perchloridi had been added gave no growth even when kept for a long period. Of these agents capable of checking the growth, acetanilide alone was available for internal administration, and this agent appears to possess antiseptic powers equal almost to those of perchloride of mercury, while being perfectly innocuous, odorless, and tasteless. Further, when administered as an internal remedy, it appears to possess the power of cutting short acute catarrhal bronchitis in a striking and rapid manner, twenty-five consecutive cases being treated with the remedy with unvarying successful result in arresting the disease within comparatively a few hours. This statement, taken with the fact, which is open for any observer to test, as to the power of arresting bacterial growth in nutrient media, should lead to an extended trial of the remedy. To produce a beneficial effect doses of some magnitude must be given, such as 5 grains at alternate hours.

Mr. Grün then publishes notes of a few cases of bronchitis, in which it is stated that acetanilide not only relieved the cough, but that its administration also resulted in the disappearance of the organism, and he concludes from his experiments and clinical experience that bronchitis can no longer be regarded as a manifestation on the part of the bronchial tube of a simple chilling of the blood circulating in the capillaries of the skin, although there can be very little doubt that it is from this cause that cases of bronchitis arise in an indirect manner. No doubt the chilling of the blood causes an alteration of the conditions governing either the entrance of the bacteria into the bronchial tubes, or their destruction and elimination when entrance has been obtained by them into the lung. As an hypothesis we may as-

sume that possibly the cilia of the tubes act less readily after chilling, although this has not been proved at present as far as cilia within the body are concerned. Cilia without the body do certainly require some particular temperature, at present undetermined, but none the less certain, for the proper exercise of their powers; it may be that as the chilling is more or less intense, so do the organisms penetrate deeper into the lung tissue, and give rise to symptoms of greater or less gravity. Or there may be defective power of destruction of bacteria after chilling. From examination of sputum it appears probable that the presence of bacteria or other foreign substances, such as carbonaceous particles, attracts to the surface of the mucous membrane leucocytes, phagocytes, or other wandering forms of cell-life, which, under ordinary conditions, destroy in their own manner bacteria, or carry off solid inorganic particles incapable of destruction to parts less sensitive to their presence. When, however, the numbers of bacteria are very great, the exudation is for a time not sufficiently rapid to effect the necessary clearance of the irritating substance, and further help is required. Help gradually arrives, in many cases aided by poulticing and local stimulation, and presently the difficulty is overcome, or the individual succumbs in the effort.

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### *MICROBICIDE PROPERTIES OF THE GASTRIC JUICE—MICROBES OF THE ALIMENTARY CANAL.*

In an interesting paper in the *Vratch*, KIANOWSKI has taken up the subject of the microbes of the stomach and the effects of the gastric juice on them. To solve the question, he undertook a series of experiments on both sick and well persons. These experiments have given the following results: 1. The quantity of bacteria found in the contents of the stomach one hour after a meal is not so much in inverse relation with the acidity of the gastric juice and the quantity of hydrochloric acid therein as it is in direct relation with the amount and kinds of micro-organisms introduced with the food. 2. Within the limits of the mean acidity due to hydrochloric acid, the gastric juice systematically and completely kills the microbes in the stomach; the more prolonged the action of the gastric juice, the more microbes it kills. 3. There is a general relation between the augmentation of the general acidity due to the normal or abnormal properties of hydrochloric acid on the one hand, and the quantity of destroyed microbes on the other. 4. If the acidity of the gastric juice is feeble, the microbes multiply in the stomach. 5. Experiments on sick persons have shown that if their gastric juice contains a sufficient quantity of free hydrochloric acid, it possesses the same microbicide qualities as the gastric juice of healthy persons.

The conclusions of this important paper are: 1. In a state of fasting, the stomach of a man in good health contains a great many microbes. 2. The quantity of microbes existing in the stomach during the first hours of digestion is in direct relation with the quantity introduced with the food, drink, air, saliva, etc. 3. The gastric juice, and especially the hydrochloric acid, possesses most manifest microbicide properties. 4. The microbes probably take no active part in the processes of stomach digestion. 5. Persons who by reason of some disease secrete little hydrochloric acid, more easily become the victims of poisoning by microbes or their products introduced into the stomach. 6. It is not well in the morning to remain too long a time fasting, and during epidemics, such as cholera, it will not do to let the stomach become empty; the latter should always contain a certain quantity of food, and, if possible, sterilized food.

It will be seen that these views are foreign to those published several years ago by Bichamp, who referred the entero-digestive process to the action of certain microbes called by him microzymes. Bichamp's theories were purely speculative, being based on Pasteur's studies in fermentations; his pretended microzymes have not been seen by any other microscopist. The older chemical theory of digestion still holds its grounds.

VAN PUTEREN, in the *Deutsche Medizinal Zeitung*, reports the results of one hundred and twenty-seven experiments made upon forty children, the ages ranging between 3 and 77 days. Material for examination was obtained from the stomach by a sterilized Nélaton catheter, and examined biologically.

The proportion of bacteria in the stomach was found to be greatly increased whenever the tongue was coated or deposits existed in the mouth, these being conditions in which bacteria in the mouth were most abundant. The bacteria were much more numerous in infants fed on cow's milk than on those nursed at the breast.

Of especial interest are the results which he obtained after the mouth had been thoroughly

cleansed. In eighteen per cent. of the experiments made, *no bacteria* were obtained from the stomach of breast-fed children. In forty-one per cent. the proportion to the average number found in the stomach under other circumstances was as 1 to 130. In the cases in which bacteria were found to be absent from the stomach, the digestion was apparently perfect; hence the writer reaches the conclusion that bacteria have no essential physiological function in the infantile stomach.

This writer's experiments further show that the acidity of the stomach does not prevent bacterial growth. He made eight experiments to determine the acidity, and found it only .6 to .8 per cent., while Miller had shown that 1.6 per cent. acidity was necessary to inhibit bacterial growth.

It will be seen that these latter experiments hardly agree with those of Kianowski. Doubtless in healthy infants fed on unsterilized cow's milk, the action of the gastric juice is similar in its microbicide properties to that of adults that habitually eat unsterilized food. Such infants are more liable to microbe infection through the alimentary canal than infants fed on breast-milk. And it may well be conceived that the alimentary canal of the latter will be tolerably free from bacteria, especially if the mouth be kept clean.

The influence of bacteria in abnormal intestinal processes is awakening attention, and this whole subject has been investigated of late by Baginsky, Lesage, Escherich, and others. The bacteria found in summer diarrhœa are very numerous, but how far they are simple accompaniments and how far they are the causes of morbid changes is not yet definitely determined. Certain it is that there is everywhere great interest in maintaining intestinal antisepsis in all the summer complaints of children and adults, and the results of such antiseptic treatment are sufficiently encouraging.—*Boston Medical and Surgical Journal*, August 13, 1891.

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### *TREATMENT OF GONORRHŒAL RHEUMATISM.*

In a discussion on this subject at a meeting of the Paris Société de Dermatologie et Syphiligraphie on May 14, M. JULLIEN said that, having regard to the infectious origin of the disease, he had for the last five years systematically treated it with subcutaneous injections of bichloride of mercury with extremely satisfactory results.

M. E. BESNIER pointed out that joint-inflammations of gonorrhœal origin often spontaneously undergo rapid modifications, which made it very difficult to judge of the effect of particular remedies. In his experience local treatment was the most important therapeutic factor in such cases, and he placed most reliance on the method recommended by M. Lucas-Championnière, which consisted in touching the parts in a number of places with the point of the cautery, and then wrapping the joint in Vigo's mercurial plaster with cotton-wool dressing afterwards.

M. DU CASTEL said he had tried mercurial friction in one case without result, while in another case, in which, however, the inflammation was less severe, it had done a great deal of good.—*Boston Medical and Surgical Journal*, July 9, 1891.

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### *THE TONGUE IN SCARLET FEVER.*

In the *Deutsche Medizinal Zeitung* for August 6, 1891, DR. A. NEUMANN divides the modifications which occur in the mucous membrane of the tongue in scarlet fever into three stages.

*First.*—The swelling of the entire mucous membrane, with turgidity of the entire epithelium.

*Second.*—The stage of desquamation.

*Third.*—The regeneration of the lost epithelium.

From the fact that the mucous membrane of the tongue over the filiform papillæ loses its epithelium, and the fungiform papillæ thus become more prominent, the tongue in scarlet fever assumes its well-known characteristic resemblance to the strawberry or raspberry. Of forty-nine patients, in thirty-eight (seventy-nine per cent.) the characteristic scarlet fever tongue was well marked; while in four only one or the other of the three stages was faintly indicated. In these cases any detectable modification in the mucous membrane was entirely wanting, so that, therefore, the typical scarlet fever tongue was absent in twenty-four per cent. of the author's cases. As a rule, those disturbances of digestion are responsible for this state of affairs, for from this cause the mucous membrane of the tongue becomes so altered before the scarlet fever itself commences that any further alteration of the mucous membrane is impossible. In the majority of cases the cloudy epithelium of the mucous membrane and of the tongue had been fully separated within three to five days. Marked raspberry

tongue was noted in three cases on the first day, in five cases on the second day, in six cases on the third day, in four cases on the fourth day, and in twenty cases at a later date. It had disappeared on the seventh day in eleven cases. There is no relationship between the intensity of the scarlatinal process on the tongue and the intensity of the fever or the intensity of the cutaneous manifestations of the disease.

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### *THE THERAPEUTICS OF THE SENILE HEART.*

Dr. George W. Balfour (*Edin. Med. Journ.*, June, 1891) says that the senile heart is synonymous with the gouty heart, but that it must be remembered, in the first instance, that all affections of the heart found in the old are not necessary senile in origin, and he quotes the case of an old man who had had mitral incompetence for no less than sixty-two years at least. Another point to be remembered is that even when an existing affection of the heart is certainly senile in character in the sense of having come on primarily and insidiously after middle life, and possessing the ordinary characters of a heart strain from internal causes, the symptoms complained of do not always depend upon the heart affection, even when they seem to be distinctly cardiac in their nature. Anæmia from various causes, for example, loss of blood or malignant disease, may be the actual cause of the symptoms. Simple irritability is the earliest indication of advancing senility in the heart; uneasiness or actual pain localized to the heart region, fits of palpitation on any sudden exertion or emotion, tremor cordis coming on without warning,—these are the symptoms of cardiac failure based on malnutrition. The pulse may be small, soft, and compressible, and the blood tension low. All possible sources of loss of blood or of interference with blood making organs should be sought for, and removed when possible. Among such causes may be mentioned loss of blood from the nose or from piles, an insidious but persistent diarrhœa, or excessive venery. In regard to treatment, where the blood-pressure is low any natural or unnatural drains upon the system must be remedied; the amount and nature of the work done and the exercise usually taken must be so regulated as to be adapted to the needs of the system. But even more important than exercise is temperance, not only in drink, but more especially in regard to eating. Many senile affections of the heart owe their existence to overindulgence, and all are undoubtedly aggravated by it. Cases of senile heart may be grouped for dietetic purposes under two distinct heads,—first, those who are over their normal weight, who are breathless with occasional irregularity of the heart, and with or without marked signs of cardiac dilatation; and, secondly, those who are at or below their normal weight, and who suffer very considerably from cardiac disturbances of various characters, also with or without very evident signs of dilatation of the heart. The first point of importance is to divide the day properly, so that there may be a sufficient interval between meals. In health the stomach empties itself usually three or four hours after a meal, and requires a rest before more food is ingested. We therefore get the following rules,—namely, 1, not less than five hours between two meals; 2, no solid food of any kind is to be taken between meals; 3, all invalids should have their most important meal in the middle of the day. A model dietary for a patient would be somewhat as follows: Breakfast at 8.30 A.M. Small slice of dry toast with butter, one soft-boiled egg, or a small quantity of fresh white fish, with a small cup of good coffee or tea, with cream, milk, or sugar, if required; cocoa, of course, may be substituted for the tea or coffee, and some patients prefer oatmeal porridge, but in that case they must give up the beverages mentioned. Dinner at 1.30 or 2 P.M., to consist of fish, meat, and pudding, any two being taken. After a time any kind of fish and any kind of meat may be eaten in moderation, but at first the choice should be restricted to white fish boiled in milk, sweet-breads, chicken, game, rabbit, or tripe; any form of milk-pudding with stewed fruit may be allowed, but soup, pastry, pickles, and cheese are absolutely prohibited; one vegetable may be given,—namely, potato; spinach, tomatoes, onions, leeks, or celery, peas and beans must only be used sparingly; all other kinds are absolutely prohibited. A single cup of tea (or, better still, hot water) may be allowed at four or five o'clock, but not a morsel of anything to eat then. At 7 P.M. comes the final meal, consisting of a little white fish and potato, a bit of milk-pudding, porridge and milk, or cold bread with hot milk poured over it. At bedtime a small cupful of hot water will sooth the stomach, promote sleep, and pave the way for a comfortable breakfast the next morning. Alcohol should, if possible,

be entirely dispensed with; there is no more potent cause of cardiac dilatation than the abuse of spirits, and no more certain obstacle to the rehabilitation of such a heart than the excessive use of them. If old habits are too strong, a little light claret or a light white hock should be given with the mid-day meal, or a little well-diluted whiskey. Tobacco should be absolutely given up, or its use reduced to a minimum. As regards drugs, it must be remembered that all varieties of the senile heart are forms of failure with complications. The treatment must be tonic, and digitalis is the chief and most thoroughly reliable cardiac tonic. Where any drug can act at all it will never fail; it should be employed in doses of 10 minims of the tincture in the twenty-four hours, or at most in the twelve hours. Nativelle's granules form an elegant and efficacious preparation; the dose should not exceed 1 granule in the twenty-four hours. The object of using digitalis in the senile heart is not to remove dropsy to slow the pulse or to contract the heart, but by the gradual accumulation of trifling advantages to tone up, strengthen, and improve the nutrition of the cardiac muscle. Strophanthus cannot rank with digitalis, except that a solution for hypodermic use is much more possible. Strychnine and arsenic are both very useful in the treatment of the senile heart, and, in lesser degree, the protosalts of iron. For relieving spasm and lowering blood-pressure, the nitrites, and especially nitroglycerin, have no equal. Iodide of potassium and colchicum are indicated where the gouty nature of the affection is very pronounced, while for acting on the bowels rhubarb and soda, or the compound colocynth pill, are to be preferred.—*British Medical Journal*, July 11, 1891.

### *ERGOT AS A HÆMOSTYPTIC TINCTURE.*

Dr. Fritsch (*La Pratique Médicale*, June 30, 1891) writes that he employs ergot but little in his obstetric practice in comparison to his large use of this drug in gynæcology. He employs ergot in pills, employing gum arabic as an excipient; but when he wishes to obtain prompt effects he prescribes ergot in the form of a tincture composed of powdered ergot, 20 parts, alcohol, 20 grains; and 500 parts of warm water, the bulk being reduced by boiling to 200 parts. He found, however, that this tincture soon produced gastric disturbance, and he finally substituted for it Danzel's ergotin, seventy-five grains each of ergotin being made into one hundred pills. All these pills were to be taken in the course of a day. He found that this mode of administration of ergot might be continued for months without producing any serious inconvenience, and always with the most satisfactory results. In cases of congestion, dysmenorrhœa, and in menorrhagia, Dr. Fritsch states that he has obtained good results from the use of a mixture containing forty-five grains each of hydrastis canadensis, extract of gossypium, and ergotin, made into one hundred pills, of which three may be taken in the course of a day.

### *NAPHTHALENE AS A VERMIFUGE.*

In the *Mercredi Médical* for May 20, Dr. Mirovitch, of Biélsk, speaks of naphthalene as the best agent for expelling tænia. In his opinion it is superior to all other remedies, because of the certainty of its action and the absence of all toxic effect, for it is absorbed in but very minute amount by the gastro-intestinal mucous membrane. The dose for adults is 15 grains, given when the stomach is empty, and followed immediately by two tablespoonfuls of castor oil. Children may take from 4 to 8 grains, and at the same time a tablespoonful of castor oil flavored with a few drops of essence of bergamot. During the two days preceding the administration of the drug the patient is to eat freely of salted, acid, and spiced foods. Dr. Mirovitch states that in all his cases one dose of naphthalene was sufficient to expel the tape-worm, the head included, even in cases in which other drugs had failed. He has also found the drug most effective in the treatment of patients with escarides.—*New York Medical Journal*, August 15, 1891.

### *THE TREATMENT OF ENDOMETRITIS BY PENCILS OF SULPHATE OF COPPER.*

At the meeting of the Académie de Médecine, held August 4, 1891, Dr. Dumontpallier described his method of treating endometritis, which consists in introducing, and then allowing to remain in the uterus, a pencil composed of 1 part of sulphate of copper and 1 part of rye flour (*La France Médicale*, August 1, 1891). The pencil should have the same length as the cervical uterine canal, and should contain seven and a half grains of copper. This is, according to the author, suf-

ficient to produce superficial cauterization of the mucous membrane, from the fact that it remains in the uterine cavity for several hours. The sulphate of copper penetrates to the glandular cul-de sacs, where it completely destroys all septic elements; in fact, as soon as the pencil is introduced, it becomes softened by the intrauterine liquids, the uterus, contracting upon the foreign body, spreads the substance over the entire uterine surface. Scarcely any pain is produced by the sulphate of copper, although in three or four per cent. of the cases the application of the pencil of sulphate of copper may produce slight transient perimetritis. In no case, the author states, has he ever noticed any atresia of the cervico-uterine canal. The author maintains that a single application has been in his hands sufficient to cure sixty per cent. of his cases, and that the facility of application, the absence of all complication, whether immediate or remote, the short duration of treatment, and the persistence of cure are marked advantages of this system of treatment. Only when the sulphate of copper employed in this way fails is it necessary to resort to chloride of zinc.

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### *CHLORALAMIDE IN SURGERY.*

Frequently after an operation of magnitude it is necessary to give the patient something to quiet the nervous system and to produce sleep. It is not always pain which causes restlessness and sleeplessness after the operation; in the majority of cases I am sure that the impression upon the nervous system, and particularly upon the mind, is what leads to insomnia, for under our antiseptic methods, and especially where the wound has been covered with iodoform,—a drug having decided anæsthetic properties,—there is but a trifling amount of pain, often none, even after the most severe operative procedures. But as night draws near there is a growing restlessness, and at the hour when sleep should come the patient is anxious, nervous, and wakeful. What can be done? The most universal rule among surgeons is to order a hypodermic injection of morphine; but this is unjustifiable unless there be some indication for the anodyne effect of the opiate. This is markedly true in abdominal surgery, but in any case the morphine is objectionable because it is apt to produce vomiting; is certain to seriously interfere with the process of digestion; is sure to induce constipation, and nearly always to give rise to headache, malaise, etc. Chloral has been suggested as a proper hypnotic, but chloral depresses the heart to a dangerous degree, and therefore cannot be used in these cases. Bromides, with hyoscyamus, will sometimes answer the purpose admirably, but most stomachs rebel against this combination, so that it is hardly safe to try it. What, then, can we use? If a drug can be found which will be free from all these objectionable features it unquestionably will fill an important place in our materia medica.

Such a one, according to DR. LANPHEAR (*Denver Medical Times*, August, 1891), has been discovered in chloralamide. This comparatively new medicinal agent is prepared by combination of 2 parts of chloral hydrate with 1 of formamide; it is found in commerce as a colorless, crystalline substance, nearly tasteless, soluble in about 20 parts of water and 2 of alcohol. It will keep indefinitely in solution without decomposition, but cannot be dissolved in hot solutions because of chemical changes. It acts very much like chloral and sulphonal, but does not depress the heart like the former, and is much superior to the latter, in that it is soluble, exerts no bad influence upon digestion, possesses no diuretic action, never causes pruritus, vertigo, diarrhœa, or other bad symptoms which sometimes follow the administration of sulphonal; in fact, experience is demonstrating the accuracy of Reichmann's observation: From chloralamide no ill effects in the circulation or in the feelings of the patient are to be noted; and, besides, the cost is much less than that of sulphonal. T. Lauder Brunton, in a recent report on the relative utility of different hypnotics, highly commends it, and states that with reference to certainty of action and the question of tolerance, chloralamide surpasses.

It exerts its influence upon the brain and spinal cord, producing sleep and reducing the motor excitement; it may be regarded as a pure hypnotic without anodyne properties, though some late reports would indicate that it has to some degree the power for partial abolition of pain. It is, then, the ideal sedative, giving prompt and satisfactory action, reliable results, and absolute freedom from evil side- or after-effect.

Its dose is from 15 to 60 grains. The proper method of exhibition is to give 15 to 30 grains (according to the condition of the subject), repeating the dose in an hour if the first have not produced sleep. Usually from

10 to 30 grains gave five to eight hours' refreshing slumber. The best method of giving it is to dissolve the required amount in about a teaspoonful of whiskey or brandy, or in a small glass of wine, if the patient prefer. It may also be given in anything containing alcohol in considerable quantities, as tincture cardamom compound, tincture of hyoscyamus, etc. If, for any reason, it cannot be given in this manner, it may be taken in powder form, and washed down with cold water or cold tea. The direction of W. Hale White, of London, is a good one,—viz., tell the patient to dissolve the powder in brandy and water to his liking, and drink it shortly before going to bed; this combination with spirits is particularly good in our surgical cases where whiskey is usually indicated, at least in most major operations. If in any case it be better to have the medicine in liquid form, this combination may be prescribed:

℞ Chloralamide, ʒii;
Spts. frumenti, f℥i;
Misce bene ut ft. solut. et adde
Syrupi rubi idæi, f℥i. M.

Sig.—One tablespoonful, to be repeated in one hour if sleep is not produced. This makes a decidedly pleasant mixture of slightly acid taste and fruity aroma and flavor.

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### *AN ICHTHYOL VARNISH.*

UNNA (*Monatshefte für Prakt. Dermatologie*, Bd. xii. No. 2, 1891) has for some time felt the desirability of having a solution of ichthyol of considerable strength which would dry rapidly, would not irritate the skin, and would be soluble in water. After numerous experiments, he has found the following formulæ to fulfil all indications. In the preparation of the paste, some substance was needed to prevent the starch from being precipitated, and a solution of albumen made concentrated by gentle heat effectually hinders this deposition:

℞ Ichthyol, 40;
Starch, 40;
Solution of albumen, 1 to 1½;
Water, to 100.

The constituents must be incorporated in this order: First, the starch is to be uniformly moistened with the water; then the ichthyol thoroughly rubbed in; and, finally, the solution of albumen mixed with the others. The other varnish is somewhat different. In it carbolic acid replaces the albumen:

℞ Ichthyol, 25;
Carbolic acid, 2.5;
Starch, 50;
Water, 22.5.

The ichthyol and carbolic acid are dissolved in the water by aid of heat, and with this an equal amount of starch is slowly rubbed up. These varnishes, when smeared on the skin, as on an acne, an acne rosacea, or a lupus erythematosus, dry in course of two minutes, and can be easily washed off without any irritation from friction. Thus they are preferable to the ichthyol collodion, being only inferior to it, inasmuch as they do not exercise the same amount of compression which it does. They are, like it, not readily removed by the perspiration, as the zinc ichthyol jelly is apt to be, while they cause no soiling of the bed linen. They are likely to come into extensive use.—*Edinburgh Medical Journal*, July, 1891.

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### *TREATMENT OF EPILEPSY BY THE CONJOINED EMPLOYMENT OF BROMIDE OF POTASSIUM AND OF AN AGENT CAPABLE OF RENDERING THE NERVOUS CENTRES ANÆMIC.*

Under this head, POULET, of Plancher-les-Mines, in the last *Bulletin Général de Thérapeutique*, writes of a combination of bromide of potassium with Calabar bean, which has given him success in the treatment of obstinate cases of epilepsy where the bromides alone had failed. A favorite formula of his is the following:

℞ Bromide of potassium, 100 parts;
Tincture of Calabar bean, 35 parts;
Water, 470 parts.

Sig.—A tablespoonful, to be increased to a tablespoonful and a half, then two tablespoonfuls, daily.

A tablespoonful contains 3¾ grammes (or about 57 grains) of bromide and 1.08 grammes of the tincture. The medicine may be given in divided doses instead of in one full dose, half a teaspoonful being given at first twice, then three times, then four times, a day.

Poulet reports five obstinate cases treated in this manner. These were cases where bromide alone failed to cure.

In No. 1 the fits were formally six or eight a week (*grand mal*). After a year of the new treatment, no return of the epilepsy. In this patient the tincture of Calabar bean is occasionally replaced by eserine, in the dose of one milligramme to each gramme of bromide; the result has been the same. No

contraction of the pupil has been observed during the administration of the medicine.

No. 2, a most obstinate case, had been epileptic for eight years. Eight or ten fits a day. Failure of bromides, given alone, also of bromides and picrotoxine. Definitive cure under bromides associated with tincture of Calabar bean.

No. 3 was also a case of chronic, inveterate epilepsy. Several months' treatment by the combination above specified has given exemption from all convulsive accidents.

No. 4 was a case of grave epilepsy at the menopause. Frequent daily vertiginous attacks, ending in convulsions and stupor. At first the disease was successfully combated by bromide of potassium associated with picrotoxine; this combination afterwards failing, sulphate of atropine was substituted for the picrotoxine (six grammes of bromide of potassium, one milligramme of atropine, daily). The latter treatment has been kept up for a year, with complete cessation of the vertigo.

No. 5 was a case of cardiac epilepsy. The *grand mal* attacks were followed by hemiplegia, with stupor and hebetude (*état de mal*). A combination of bromide and digitalis caused disappearance of the epilepsy (eight grammes of bromide, associated with two grammes of tincture of digitalis in divided doses, daily).

Poulet terminates his article by the following conclusions:

The bromides remain the sheet anchor in the treatment of epilepsy, and by the term *bromides* we have especial reference to the bromide of potassium, which alone is truly efficacious.

There are, however, a great many epileptics whose attacks are only mitigated or postponed, not completely suppressed, by bromide of potassium.

In such cases, if we associate the bromide with some medicament which possesses properties identical with those of the bromide,—that is, being capable of anæmiating and decongesting the nerve-centres and paralyzing the system of voluntary muscles,—we generally obtain results which are perfectly satisfactory in essential epilepsy, and even in partial or Jacksonian epilepsy, on condition that, in the latter, we begin by the specific treatment of the determining cause. The substances that have been the most successful are Calabar bean, picrotoxine, and belladonna. In chronic epilepsy, digitalis must be added.

We may indifferently substitute sulphate of eserine for the preparations of Calabar bean, sulphate of atropine for those of belladonna, and digitalin for digitalis.—*Boston Medical and Surgical Journal*, July 30, 1891.

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### *CHLORALCARBAMIDE.*

When 165 5 parts of the hydrate of trichloraldehyde are mixed in a porcelain mortar with 60 parts of carbamide, the mixture liquefies, and remains in the form of a clear, oily fluid. On dissolving this substance in three times its quantity of water warmed to 60°, and then allowing the mixture to cool, a crystalline mass is obtained, which has been called chloralcarbamide, and which dissolves readily in warm water and in alcohol, and less readily in warm alcohol. According to the experiments made by PROFESSOR KOBERT, though possessing hypnotic properties, as is the case with all the derivatives of chloral, it is not yet suitable for employment, as its effects are too feeble and too slow in being produced. —*Revue Internationale de Bibliographie*, July 25, 1891.

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### *THE ETIOLOGY OF PHTHISIS.*

In the Section of Medicine of the British Medical Association, at its recent meeting at Bournemouth, DR. P. H. PYE-SMITH delivered an address on the "Etiology of Phthisis," of which the following is an epitome (*Lancet*, August 1, 1891).

He said he was sure that the cause of phthisis was a fit subject of discussion, because it is still unknown. But it might be asked, Is not the cause of phthisis known? Have we not the bacillus tubercle? and is not phthisis an infectious disease like syphilis or typhus fever? Accepting both these statements, yet the true etiology of phthisis was not known. On what basis did they rest? What were the criteria of a pathogenic organism? 1. There must be a specific microbe, clearly identified not only by its size, shape, and reaction to staining agents, but also by its development and propagation. Till this was ascertained, it was idle to discuss the claims of a microbe to be pathogenic. 2. The disease must be equally definable either by its anatomical characters or by a characteristic and unvariable course, or by "breeding true." For the present purpose, phthisis might be defined as a chronic disease, with no typical limitation of its

course, affecting the apices of both lungs and travelling downward, always tuberculous, always caseating, always pneumonic, and almost always more or less fibroid, ulcerative, excavating, and destructive, but also with great capacity of healing and involution, accompanied locally by pleurisy, bronchitis, and lobular pneumonia, accompanied also by general anæmia, dyspepsia, wasting, and pyrexia, with tuberculous affections of the larynx, ileum, and other organs. 3. The microbe must be present and demonstrable in every case of the disease. 4. It must not be present when the disease is absent. 5. When isolated by appropriate cultivation it must be capable, on introduction into a living organism, of reproducing, first, its own progeny, and, secondly, the characteristic symptoms of the disease. All these stringent requirements had been satisfied by the bacillus which the genius of Professor Koch discovered,—would he had been content with the discovery! Must it, therefore, be concluded that phthisis is produced by contagion, as surely and exclusively as syphilis or measles? It was reasonable to expect in the case of phthisis that, admitting the necessary invasion of the specific bacillus, there should be predisposing causes to favor its reception, without which it is perhaps powerless; and this was in full accordance with the vast experience accumulated since medicine was first studied. Experiments had proved that tuberculosis might be produced by inoculation of a pure cultivation of the microbe under the skin, or into the great lymph space of the peritoneum; also that the contagium might be injected as spray or dust into the trachea, or be administered in food, with success. In human beings, probably the most frequent vehicle of the contagium was dried-up sputum, and that it was carried in the respiratory air to the stomata of the air-vesicles. As a liquid it might also be conveyed in milk from tuberculous cows to the alimentary canal, and perhaps in other ways; and, as a solid, in the flesh of tuberculous animals. But why were the latter methods so rare, except in the case of children? Why did not infection occur through open sores or wounds, as in the case of pyæmia? Why was not lupus generalized? What, again, determined whether the contagion should be taken up from the lymph-spaces and conveyed to the lymph area, or absorbed by the veins and carried into the general circulation? As to the conditions that made the access of the bacillus dangerous, they might be divided for convenience into local and general, or constitutional; but probably the latter were only effective in so far as they modified the nutrition, circulation, or function of the lungs or other organ to which the microbe gained access. The purely local conditions might be thus suggested for discussion: "Pulmonary catarrh,—not bronchitis affecting the tubes lined with ciliated epithelium, but the form of 'pneumonia' which affects the intralobular passages and ultimately the air-sacs; not lobar and fibrinous, but lobular and catarrhal inflammation. How far is this condition a necessary antecedent? Does phthisis ever follow hepatization, or bronchitis, or emphysema? What relation is there between pleurisy and phthisis? Does phthisis ever begin without preliminary catarrh,—that is, do the bacilli themselves, mechanically or by their chemical products, act as irritants on a healthy lung and produce the soil suitable to their future growth? Is the pulmonary catarrh which follows measles more apt to end in phthisis than any other, or that which is often a sequela of whooping-cough? Again, are the various forms of pneumo-coniosis,—potters', miners', grinders', iron-workers' phthisis,—all of them tuberculous? If so, must we assume that when pulmonary catarrh is severe and protracted it always becomes the seat of tuberculous affection? in other words, is the bacillus of tubercle practically ubiquitous in cities and workshops? Does the influence of cold, damp dwellings and undrained soil—which the late Dr. Bowditch in New England and Dr. Buchanan in our own country have demonstrated—depend on the frequency of pulmonary catarrh to which these conditions give rise? Then, as to cases of phthisis following traumatic or idiopathic hemorrhage? Does a healthy lung ever bleed? and does pulmonary hemorrhage lead to catarrhal pneumonia, tuberculous infection, and caseous degeneration and ulceration? or is hæmoptysis only the first symptom, and never the first event, in the case of pulmonary phthisis? If hæmoptysis is a cause of phthisis, why does no tuberculous disease supervene on hemorrhage from the lungs of cardiac origin? Does a wound of the lung or injury of the chest lead to phthisis, whether by causing hemorrhage or inflammation? Was this the explanation of the classical instance recorded by Herodotus (lib. vii., cap. 88), or was the fall and the subsequent phthisis a mere coincidence? Do the bacilli act as mechanical irritants, or do they poison the tissues with their excreta?

In either case, do they set up pulmonary catarrh, or do they find it? Of general predisposition, can either anæmia, starvation, drink, or bad ventilation, syphilis, or diabetes be regarded as causes of phthisis; or can their action be explained as either favoring lung catarrh, or providing ready access of abundant bacilli to catarrhal lungs? How shall we meet the undoubted fact of hereditary consumption? Is it not more frequent than the chance incidence of a very common malady will explain? How many cases may be due to direct contagion, as from mother to child, or from one child to another? How many can be fairly attributed to common habitation, trade, food, or habits? In strictly hereditary cases, is it special susceptibility to the poisonous products of bacilli, or tendency to pulmonary catarrh, or vulnerability of the tissues generally which is transmitted. What is the true relation of pregnancy and childbearing to consumption? Is phthisis ever congenital; and if not, at what age may it first appear? Again, are we to look on the very important symptoms of derangement of the digestive organs—the not infrequent initial vomiting, the early dyspepsia, anæmia, and wasting, which often precede the cough and physical signs of pulmonary disease—as due, like the pyrexia of phthisis, to the effects of bacillary infection, or are they in any cases to be regarded as predisposing causes? To pass rapidly on to another group of concurrent causes of phthisis, is the traditional phthinoid chest the precursor of future or the effect of present disease of the lungs? The same question applies to the *ungues aduncæ*, and to the general build or *habitus* of the body, which has been supposed to denote the tuberculous predisposition or diathesis. Does curvature of the spine or rickets lead to phthisis? Does caries of the bones or tuberculous disease of the joints or lymphglands, or lupus, or leprosy, and if so, how and under what conditions? What are the facts as to the liability of the two sexes and of different ages? and do they throw any light on the etiology of phthisis? What are the facts of geographical distribution, and how do they affect the theories of contagion, of pulmonary inflammation, and of general vulnerability? What animals are most liable to tuberculous disease of the lungs, and to what causes may we ascribe the almost complete freedom of some and the equally marked proclivity of others? Lastly, we may inquire whether there are any natural prophylactics of phthisis,—ventilation, cold, heat, particular kinds of food, or special diseases, such as gout, cancer, and valvular disease of the heart?

## Correspondence.

### BERLIN.

(From our Special Correspondent.)

The Carcinoma Question—A Sensational Paper—The Latest Consumption Cure—Restrictions to Hypnotism—Heligoland, the New Zoological Station—A Clerical Polyclinic.

The verdict which the Prussian Minister of Cult has given in reference to the sensational charges of malpractice on carcinomatous patients, advanced against Professors von Bergmann and Hahn, has been exceedingly gratifying to the entire profession. Instead of being censured or punished, the two famous surgeons have earned praise and encouragement from the government for their valuable researches in the service of suffering mankind.

The subject of the curability of cancer is now the predominating topic of the day. It must be admitted that a change has taken place in the opinion of the profession as to the curability of this malady. I remember that about ten years ago a world-renowned surgeon declared that cancer was not only incurable but would ever remain so. At present in authoritative medical circles the view is gradually gaining ground that carcinomatous affections may eventually become controllable by the combined efforts of bacteriological research and surgical skill. The pertinent investigations of Professor Adamkiewicz, of Cracow, have attracted the attention of the entire medical world and also of the various governments, while the Berlin Faculty has as yet taken no definite stand in the matter. Professor Billroth, of Vienna, has not refrained from expressing his views on the carcinoma question. In a lecture delivered last week before a private class of physicians the nestor of surgery made the following statement: "Gentlemen, I no longer believe in the incurability of cancer, but regard the affection as controllable if its specific causal agency could be isolated." As Professor Adamkiewicz, in his latest communication, claims to have accomplished this isolation, we are justified in entertaining hopes regarding the therapeutics of cancer.

A sensational paper relating to the cure of cancer has just been published by Dr. Severin Robinski, of Berlin. The best part of Robinski's pamphlet is its title, which reads: "THE

CURE OF CANCER based on Personal Researches." The author's views of the etiology of cancer are sufficient to stamp the entire work as worthless. Dr. Robinski, like old Rip Van Winkle, has been asleep a hundred years or more. He speaks of humors and bodily juices just as the old writers were accustomed to, and preaches the doctrine of the constitutional character of cancer. Allow me to quote here a sentence of Robinski's paper: "The initiation of cancer is produced by a chemical alteration of the juices circulating in the lymphatic channels, and a subsequent morbid impression made on the anatomical elements. Persisting pressure, a blow, or a chemical irritation bring about the outbreak of the affection." It is needless to refute Robinski's etiological views of cancer. All rational observers and physicians to-day believe in the strictly local character of cancer, which becomes constitutional later on after implication of the lymphatic system and the infection of neighboring organs. I know of a patient who presented himself for treatment in the Charité for a little tumor of the lip. The growth was, after microscopical examination, diagnosticated as cancer, and excised. The patient has not shown any constitutional implication for years, which, according to Robinski's theory, would have been inevitable.

The treatment of cancer proposed by Robinski is not only useless, but even harmful. Cancer is often curable if operated for sufficiently early. Hence it is losing precious time to await the action of internal remedies, such as advocated by Robinski. These are by no means new medicaments, but our old friends acetate of potassium (5 in 250 of water, a tablespoonful *ter die*), or, if this should prove inefficacious, chlorate of potassium (1.5), together with iodide of potassium (.5 in 200 of water, a tablespoonful *ter die*). I am afraid that Dr. Robinski will not earn the title of benefactor of mankind by his cancer cures.

Knowing that you expect to hear in each of my monthly letters of a new consumption cure I shall duly register here the latest. This time the new cure hails from Italy, and the doctor's name who is longing for fame is Tacchini, from Casate-Nuovo. Tacchini's great remedy is still a dark secret to all outsiders. All that has thus far been divulged is that the remedy enters the system by inhalation. Tacchini is less unpretentious than Koch, and declares that, as proven in a number of cases, his treatment is successful, even in the third stage of consumption. I believe it is indicated to ask Dr. Tacchini to keep his secret for himself.

The government is preparing a bill containing restrictions and heavy fines against the illegal or unwarranted exhibition of hypnotism. Last week Dr. Sandmaur, of Münsterberg, was tried for maltreatment, consisting in a senseless application of hypnotism. Dr. Sandmaur had hypnotized a patient, a workingman, 20 years of age, for nine days daily, and on the last day four times. The result was nervous hyperexcitation, terminating in mania. The doctor was fined four hundred and thirty marks.

The German government is steadily on the lookout to increase the chances of scientific research. Heligoland, the latest peaceful conquest of Germany, will be made a chief station for biological investigations. This is all the more to be welcomed, as England, the prior mistress of Heligoland, has in no way utilized the favorable location of the island for the study of sea-life. This is the first German zoological station maintained by the government, for the station of Professor Dohrn, at Naples, is a private one, and is merely subsidized by the Prussian state. It will interest you to learn that, in conjunction with the zoological station, a museum of natural history will be fitted up by an amateur biologist, Mr. Gaetke, a government clerk, who for years has been gathering birds on the island. His collection is said to be the finest in the German empire.

The exhibition of the holy garment (the alleged unstitched coat of the Saviour) at Treves, Rhenish Prussia, which was opened to-day under tremendous clerical pomp and circumstance, marks the millennium of suffering humanity. From all quarters of the empire patients, rich and poor, flock to the "Prussian Rome," trusting to be relieved by viewing or touching the holy garment. The archbishop, Corum, has ordained that patients desiring to be cured by the holy garment must come provided with a doctor's certificate as to the nature of the malady and the necessary funds to pay for medical services. All that can be said about this new polyclinic is, "O sancta simplicitas!"

BERLIN, August 21, 1891.

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## *INCOMPATIBILITY OF ANTIPYRIN AND TANNIC ACID.*

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—Some time since I had occasion to give a dose of antipyrin, for its anodyne effect, at the same time that I was giving

a solution containing fluid extract of ergot and tannin. Thinking to save trouble by giving both doses at once, I dropped the powder of antipyrin into a wineglass containing the solution, and began to stir. Immediately the solution turned to a milky whiteness, and a black, waxy material formed in it in considerable quantity. Of course I did not give it, and upon my return to my office at once set to work to discover wherein lay the incompatibility.

I made a simple solution of tannin, about gr. x to aq. dest. ʒii, and then added gr. viii to x of antipyrin. The milky appearance developed at once, and, upon stirring it with a spatula, the waxy substance also formed as before, but this time it was of a light color, more of the color of tannin, and I concluded that the intensely black color it had the first time was due to the ergot. I collected it on the spatula without any trouble, and working it between my thumb and fingers, found that it would not stick, but could be drawn out in long strings, exactly like molasses candy, the "pulling" of which is such a treat for children. Pulling it in this way, the wax had a delicate, silvery, glistening appearance that was very peculiar. I would like some chemist to tell me the chemical change that takes place in its formation, and its probable effects if administered to a person, also whether or not this incompatibility was already known.

I have frequently noticed statements of the incompatibility of antipyrin with various substances, but never with tannic acid.

WALTER P. ELLIS, M.D.

LIVERMORE, KY.

[According to Millard and Campbell (*Medical Record*, August 8, 1891) the following substances produce precipitates when added to aqueous solutions of antipyrin: Carbolic acid in saturated solution, tannin (a white insoluble precipitate), mercuric chloride (a white precipitate, soluble in an excess of water), infusion catechu, infusion cinchona bark, infusion rose leaves, infusion uva ursi, solution of extract cinchona bark, tincture catechu, tincture cinchona, tincture hamamelis, tincture iodine (a precipitate soluble in water), tincture kino, tincture rhubarb. The following substances produce coloration when added to aqueous solutions of antipyrin: Hydrocyanic acid, dilute solution, yellow; nitric acid, dilute solution, weak yellow; ammonium alum, dilute solution, dark yellow; amyl-nitrite, acid solution, green; nitrous ether, alcoholic solution, green; copper sulphate, green; ferrous sulphate, yellow brown; ferric sulphate, blood red; ferric chloride, blood red; syrup iodide iron, red brown.]

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### *MORPHINE-POISONING—RECOVERY AFTER THE INGESTION OF ELEVEN GRAINS.*

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—The following case may prove of interest to some of your readers:

Miss E. C., aged 19, purchased forty-eight (four dozen) ¼-grain pills of sulphate of morphine at 2.30 P.M. August 3, and immediately swallowed forty-five of them with suicidal intent.

Friends noticed her comatose condition at 5.30 P.M., and summoned medical assistance. The physician who responded administered mustard-water, and secured pretty free emesis. He probably also administered atropine, but in what dose is not known. Coma deepened, respiration became greatly embarrassed, and the radial pulse became imperceptible. The attending physician pronounced the case a hopeless one, and prognosticated death within thirty minutes to one hour. He left the house at 2 A.M., and at 4 A.M. I was summoned, as the other physician's prognosis had not been verified. At this time the extremities were very cold, wrist pulseless, respiration 6 to the minute, and greatly embarrassed by mucus. Heart very weak,—130 to the minute. Surface cyanosed, pupils only partly dilated. Patient wholly unconscious.

I catheterized the bladder, and drew off eight ounces of smoky urine. Injected hypodermically $\frac{1}{25}$ grain of atropine sulphate, and immediately thereafter several hypodermic injections of aromatic spirits of ammonia with brandy. I also instituted artificial aid to respiration, and applied the battery over the solar plexus. Improvement became apparent at 5 A.M., and at 6 A.M. respiration had arisen to 11 per minute, and the radial pulse had returned. All methods were continued, and at 7.30 A.M. a second dose of atropine was administered,—$\frac{1}{25}$ grain.

At 8 A.M. patient swallowed medicine, and from this time on brandy, ammonia, and belladonna were given per os. At 10.30 A.M. patient moved without assistance, and roused up easily upon being shaken. A sharp cathartic and diuretic in combination were given at 9.30 A.M., and soap-and-water enema at 2 P.M.,

resulting in a pretty free action from both bladder and bowels. Recovery from this time on was uninterrupted. The points of special interest are :

The large dose and long time after ingestion.

The value of persistent effort even when death seems imminent.

The antidotal value of atropine.

The pills were fresh ones, and there is a strong probability that a large percentage of the amount of morphine taken was absorbed.

J. K. BEEBE, M.D.

## Notes and Queries.

### *NERVES AND NARCOTICS.*

In the May number of the *Breslau Deutsche Revue*, reproduced in the *Scientific American*, August 15, 1891, DR. ADOLPH SEELIGMULLER discusses the universal subject of nerve troubles as follows : "Excessive, exhausting, and too long-continued work, insufficient or irrational recreation, and deprivation of the right amount of sleep are some of the main causes for the increase of nerve troubles in our day. The competition in all the professions and callings is so great that for every person whose powers fail, ten are ready with fresh strength to perform the same or greater labor for the same or even a smaller remuneration. All exciting and weakening amusements should be done away with, and the quiet joys of family intercourse, the conversation of intimate friends, and sociable walks in the fields and woods should take the place of brilliant evening assemblies. Then every person should pursue some agreeable occupation besides his regular profession, and in the latter he ought to have frequent hours of relaxation to relieve the strain. Mental application, even for healthy adult persons, ought not to be continued for more than three or four hours at a time, and night-work it would be best to avoid altogether, as the excitement is apt to interfere with sleep.

"All who follow intellectual pursuits ought to have several weeks of complete rest at least once a year. Sleep is, however, the principal agent of recuperation. The amount of sleep needed is different for different persons. For the ordinary worker from six to eight hours is absolutely necessary ; yet how often, in the battle for existence in our time, is the desire for sleep forcibly suppressed and the night's rest improperly shortened. Sooner or later insomnia wreaks its vengeance on the offender. Many a person who once robbed himself of the necessary amount of sleep would gladly sleep now, but cannot. I do not hesitate to say that nerve troubles first develop into disease when joined with sleeplessness. It appears as a later symptom of a long-standing nervous disturbance, but to the lay mind it appears as the first sign of disorder, and is frequently taken to be the cause. The worker of the nineteenth century works beyond his strength, and in order to keep it up he resorts to stimulants,—coffee, tea, spices, alcohol, tobacco. These produce a superexcitation of the nerves, which brings in its train insomnia ; and to overcome this he resorts to narcotics. The life of many of our contemporaries consists in taking artificial stimulants to enable them to perform their work, and then resorting to powerful narcotics that can counteract the artificial stimulation and produce rest and sleep.

"Any one can see that this alternation of stimulation and depression at least once every twenty-four hours must weaken the nervous system. Coffee is a powerful stimulant for the heart, and therefore those who suffer from palpitation, from hysterical conditions, or from insomnia should avoid its use. Tea in daytime acts more mildly on most people ; but taken evenings it drives away sleep. The spices are less active nerve-stimulants ; yet pepper especially, and some of the others, affect the nerves of the digestive organs powerfully, and their liberal use in modern cookery has something to do with the epidemic insomnia. Of the injurious, the actually destructive, effects of alcohol taken in excess little need be said. We physicians are not a little to blame in that we insist on giving large quantities of alcohol in fevers and conditions of exhaustion, not to speak of the methods used to cure the morphine habit, until patients often acquire the drinking habit. The evil results of the abuse of alcohol are not often apparent. Long before *delirium tremens* or other serious brain-diseases appear, they are preceded by manifold nervous disturbances, the real cause of which is not often understood. I have frequently found that rheumatic pains that were ascribed to a cold were nothing but alcohol neuritis, a mild form of inflammation of the nerves resulting from the use of alcohol, which disappeared when the practice was given up, only to return with the slightest repetition of the indulgence. Most habitual drinkers, and some of them very early, are subject to changes in the vascular organs, such as fatty degeneration of the heart

and arterio-sclerosis, which lead to grave affections of the nervous system, like apoplexy and softening of the brain. Finally, it may be taken as proved that the children of drunkards, if they are not carried off prematurely by brain troubles, are frequently afflicted with serious nervous ailments, such as epilepsy, idiocy, and the like.

"Tobacco has come to be in our time a national poison in many countries, and most especially in Germany. As sequels of chronic nicotine intoxication may be noted without fear of contradiction: Palpitation and weakness of the heart; irregularity of the pulse, of which heart-pang or *angina pectoris* is an acute symptom; general nervous debility; tremulousness; disturbances of vision, even to the point of blindness; and hypochondriacal depression, even to the degree of melancholia. The fear-inspiring intermission of the pulse is a frequent cause of inveterate insomnia. That the children of heavy smokers suffer with uncommon frequency from nervous diseases is an established fact.

"And now for the narcotics, at the head of which stands morphine. The great danger of falling into the habitual use of this drug arises from the cowardice and degeneracy of our times. No one will suffer pain, no matter how slight or transitory. Not a tooth can be drawn, not a child born into the world without the use of an anodyne, and when death comes we must have euthanasia. It is said that many physicians lend their hands too willingly and are ready with the injecting-needle to check a pain that could easily be borne, not reflecting that it is immoral to encourage effeminacy and a dangerous thing to plant the germ of the morphine habit, a terrible passion, that leads inevitably to physical and spiritual debility and to death. The same is true of the constantly-increasing cocainism and hashish intoxication. Our generation demands above everything narcotics to produce the sleep that first we drive from us, and afterwards so fondly desire: opium, morphine, chloral, bromide of sodium, paraldehyde, hydrate of amyl, urethan, sulphonal, hypnone, somnal, and whatever are all their names,—one would think names would soon give out, so fast are these children born. But how can we sleep without resorting to soporifics? Just as the life of the soul during the day is reflected in dreams, so the conditions of sleep are determined by all that we do when awake. The chief rule is to so act waking that you can sleep. Begin by accustoming yourself to do without excitants. Many a case of sleeplessness will yield, when all other means fail, to restricting or totally abandoning for a time the use of spirituous drinks, coffee, tea, and tobacco."

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### *POISONING WITH CHLORATE OF POTASSIUM.*

Dr. Lauderer reports the case of a shoemaker, aged 18, who died from the toxic effects of this widely-used drug. Patient came to hospital complaining of tonsillitis, for which he got a gargle of 300 grammes (nearly ℥ss) dissolved in a glass of warm water. He swallowed the whole within half an hour in two drinks. The first symptoms of the drug were weariness, thirst, giddiness, followed rapidly by most alarming symptoms, arising presumably from the action of the salt on the blood: Acute anæmia, dyspnœa, cyanosis, persistent vomiting of a greenish fluid, pain in the hypochondria and around the umbilicus, with icterus. After this, liver, spleen, and renal symptoms set in. During seven days' illness the urine eliminated did not exceed 100 c.c. (= 1543.2 grains = 6.1 cubic inches, or 3½ ounces nearly). By means of the indo-sulphuric acid test not a trace of potass. chloratis could be found. The dark-brown sediment of the urine cleared up next day. Albumen was present from beginning to end. From third day epithelial cylinders were sparingly present, while the methæmoglobin cylinders were found in great numbers from the very first day, and disappeared gradually with the clearing of the urine. The spectroscope examination of the filtered urine gave the methæmoglobin spectrum. Lauderer considers—1. That the poison is simply the action of the drug, and produces changes in the physiological condition of the blood. 2. Acute nephritis is not necessarily present in all cases; but where the illness is protracted it is seldom absent, owing to the mechanical irritation of the renal epithelium. 3. The constant presence of icterus is partly due as a policholic origin and partly as hæmatogenous. 4. The vomiting, constipation, etc., are probably due to the fine peptic ulcers, produced by capillary emboli, formed by the methæmoglobin clots. 5. Cyanosis is due to the insufficient arterializing of the blood in the lung. 6. The waste material of the blood is found to be identical with that found in the renal canals from urine analysis probably having passed thither by diapedesis. 7. The best treatment in such cases within the first twenty-four hours after swallowing the salt

would be venesection, followed by infusions of sodium chloride, or, better still, transfusions of defibrinated blood. 8. Internally, potassium chlorate should not be used, more especially in children. The quantity of the drug should be carefully limited in gargles, so that small doses may be taken in cases of accident.

Wohlgemuth reported another case of intoxication from a two and a half per cent. lotion, of which the patient had used a tablespoonful every two hours for eight days for angina, a swelling on one side of the face. The appetite was lost; giddiness, thirst, etc., were present; urine dark with albumen, but no methæmoglobin. About the sixteenth day small punctiform hemorrhage spots, varying in size, were found over the legs, which soon extended over upper limbs and trunk. Wohlgemuth remarked that a four or five per cent. lotion is usually prescribed in adults without any untoward effects, but in this case he thinks the disturbed digestion and loss of appetite was the chief factor of the poisonous absorption. He advises this drug not to be administered on an empty stomach nor long continued without examining the urine for methæmoglobin, by which the dose should be guided.—*Medical Press and Circular*, July 8, 1891.

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### *TASI—A SOUTH AMERICAN GALACTAGOGUE.*

A South American asclepiadaceous plant, *Morrenia brachystephana* Grisebach (first described by this botanist in his "Plantæ Lorenzianæ," No. 575), has long been reputed among the natives of Argentina as an excellent galactagogue. Attention has recently been drawn to it in Europe by a paper submitted to the German Chemical Society (*Berichte*, 1891, p. 1849), by DR. PEDRO ARATA and CARL GELZER, on the chemistry of the plant. Dr. Arata, who is a member of the National Board of Health of the Argentine Republic, has made systematic experiments with the *sap* of the plant during the past eighteen months.

He reports the case of a woman whose milk gave out seventy days after the birth of a boy. An infusion of the milk sap of the plant was administered to her, when, after a very short time, an abundance of milk was secreted, so that the child could be fed without the aid of a nurse. The average daily dose administered was 30 grammes (about 1 ounce). The infusion prepared from the sap is yellowish and slimy, and has a sweetish taste, with a bitterish after-taste. It is not disagreeable to take, but when first administered causes a slight nausea and a little headache, also an increased perspiration, but no other untoward symptoms.

The plant is known to the natives of Argentina under the name of *tásis*. [Hieronymus, in "Plantæ Diaphoricæ Floræ Argentinæ," 8vo, Buenos Ayres, 1882, p. 177, has *tasi*.—ED. *American Druggist*.]

The plant grows all over Argentina, and is now chiefly cultivated on account of the fine silky hairs contained in the fruits, which heretofore were used as tinder by the Indians and gauchos, but are now turned into "vegetable silk." The rhizome and fruit of this plant contain an abundance of a milky juice, which is used by the natives as a domestic remedy in various diseases, but has an especial reputation as a milk-maker. The authors of the paper above quoted state that elaborate reports on this property of the plant are contained in the "Boletin Oficial de la Exposicion National de Cordoba en 1871," p. 63 *sqq*.

There is another species of tasi found in Argentina, which is *Morrenia odorata* Lindley. According to Hieronymus (*loc. cit.*), it is also called *doca*. The fruit capsules of this exude an aromatic resin, whence its name.—*American Druggist*, August 15, 1891.

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### *NAPHTHOL-ANTIPYRIN.*

Several combinations of antipyrin with compounds of the phenol class have been described recently, and M. PATEIN has reported the preparation of such combinations with $\alpha$- or $\beta$-naphthol, the former of which is a liquid and the latter crystalline. M. Patein now states (*Journ. de Pharm. et de Chim.*, June 15, p. 585) that the $\beta$-naphthol compound can be made by dissolving one hundred and fifty grammes of naphthol in ninety per cent. alcohol, and adding to it gradually one hundred and ninety grammes of antipyrin dissolved in the smallest possible quantity of water, stirring constantly with a glass rod. After a few minutes a viscous mass is formed, and then upon stirring more vigorously, so as to effect a thorough division, at the end of five or ten minutes the liquid clears, and the $\beta$-naphthol-antipyrin is deposited in very small but pure crystals that can be collected on a filter. The yield is said to be theoretical, and the whole operation requires not more than a quarter of an hour. If the small crystals be dissolved in hot sixty per

cent. alcohol, and the solution be allowed to cool slowly in a flask, fine colorless crystals can be obtained that melt at 82° to 83° C., and are soluble in alcohol and in ether, but are decomposed by cold water into naphthol, which separates, and antipyrin, which remains dissolved. In order to prevent this decomposition, a mixture of 25 parts by weight of ninety per cent. alcohol with 40 parts of water should be used. A nitrogen determination was considered to show that the product is a combination of antipyrin and naphthol, molecule for molecule, without elimination of water.—*American Druggist*, August 15, 1891.

### *PYOKTANIN IS A FAILURE AS AN ANTISEPTIC.*

Pyoktanin is a failure as an antiseptic, says Dr. Roswell Park (*Annals of Surgery*). It cannot be relied upon in surgery except in strength that is dangerous. As an injection in gonorrhœa, he adds: "I have had no experience with it, but find that most of those who have tried it have met with disappointment. Upon granulating surfaces it does appear to be stimulating and to exert a desirable effect, but no more so than other substances within easy or easier reach, and its stain is often undesirable. In ophthalmological practice it appears also to have scarcely come up to the requirements of the day. On the whole, then, it has but few qualities by which we are to commend it above numerous other drugs of its general class, while in all that may answer to the more scrupulous demands of aseptic surgery it has proved in my hands—as in those of others who have tested it from the purely clinical stand-point — disappointing."—*New York Medical Journal*, August 15, 1891.

### *DIURETIN.*

The accounts of the action of diuretin (theobromine-sodio-salicylate) have varied so much that it is not by any means certain whether this drug can be admitted on our list of reliable diuretics. All we can at present do is to form our own conclusions from the published results. Dr. Heissler has tried its effect on one healthy subject, four patients with heart-disease, two with nephritis, and one with cirrhosis of the liver. His observations were made at three periods,—viz., before, during, and after the use of the drug. The conclusions drawn from his results are as follows: 1. The drug certainly produces a rise of blood-pressure. 2. It is not only a diuretic, but has an action on the heart. 3. It gives remarkable results, especially in cases of "asystoly" without valvular incompetence. 4. When the heart-muscle is diseased the diuretic effects are much less marked. 5. Diuresis is much more abundantly produced in acute than in chronic nephritis. Albumen is never increased as a consequence of the administration of diuretin. 6. No diuresis followed its use in the case of cirrhosis of the liver. 7. On the healthy man the drug has but little effect.—*Medical Record*, July 4, 1891.

### *A MEANS OF PRESERVING FEHLING'S SOLUTION.*

As is well known by all who have even had little experience in the testing of urine by Fehling's solution, this reagent becomes unreliable after it has been kept but a few weeks. In the *Lyon Médicale* for July 12, 1891, Dr. L. Patel suggests as a simple means of avoiding this inconvenience that a solution of sulphate of copper and an alkaline solution should be prepared and kept separate, and only mixed at the amount of testing. As is well known, Fehling's solution is composed of sulphate of copper, 34 grammes; tartrate of potassium and sodium, 173 grammes; caustic soda, 300 c.c.; aq. distill., q.s. ad 1000 c.c. The tartrate of potassium and sodium are dissolved in 300 c.c. of distilled water, which, united with the 300 c.c. of caustic sodium, form 600 c.c. of an alkaline solution. 34 grammes of the sulphate of copper are then dissolved in the remaining 400 c.c. of distilled water, and it is only necessary that these two solutions be mixed to obtain a litre of Fehling's solution. In testing it is important that care be employed when the mixture is prepared that the proper proportions are observed; thus, at the moment of testing with a pipette 6 c.c. of the alkaline solution and 4 c.c. of the solution of copper should be mixed in a test-tube so as to obtain 10 c.c. of a perfectly fresh and absolutely reliable preparation of Fehling's solution.

### *THE ACTION OF THE LIVER ON COCAINE.*

The symptoms of intoxication observed after an overdose of cocaine present several points of difference, according as the drug has been injected subcutaneously or swallowed, an observation which holds good with respect to other substances besides cocaine.

So far as this drug is concerned, it has now been determined experimentally that cocaine introduced directly into the general circulation is four or five times more toxic than when injected into the portal vein. This difference of toxicity is attributable to the action of the liver during the passage of the drug through that organ. Not only are the toxic properties lessened, but they are otherwise modified, for after injections of the drug into the portal vein the convulsions are less powerful and less frequent, and the rise of the temperature is not so much marked as when injected into a peripheral vessel. It is probable, therefore, as M. HEY points out, that the liver retains a large proportion of the poison, and modifies the constitution of the portion allowed to pass.—*Medical Press and Circular*, July 22, 1891.

### *MEDICINAL QUALITIES OF NUTMEGS.*

The medicinal qualities of nutmegs are worthy of considerable attention on account of their value in the treatment of diarrhœa, many cases quickly yielding to the administration of half a drachm in milk. Insomnia may be effectually relieved by them when opium fails and chloral is not advisable. It is also a sedative in delirium tremens, and can be given with safety and marked benefit. An excellent ointment for itching and irritable hemorrhoids is composed of two drachms of powdered nutmegs, one drachm of tannic acid, and one ounce of lard (*Medical Bulletin*).—*Dietetic Gazette*, August, 1891.

### *TACHYCARDIA.*

FRAENTZEL defines this disease as one without demonstrable organic heart lesion, in which repeated sudden attacks of rapid heart action occur and as suddenly disappear. The number of beats may reach 140 and over per minute. He considers most of the cases to be due to paralysis of the inhibitory fibres of the pneumogastrics, and others to irritation of the accelerator fibres of the sympathetic. The former may sometimes be controlled by digitalis, or by pressure over either or both pneumogastrics in the neck. The latter may frequently be controlled by a single dose of morphine. It is sometimes difficult, however, to determine to which of the two groups a case belongs. The author closes his article by quoting the following case: A man, aged 35, complained for three months of sudden severe palpitation of the heart. The heart's dulness was increased; there were no murmurs. While in the wards, the patient had two attacks which responded to digitalis. A third attack occurred, with rapid dilatation of the heart, in which the patient died. The post-mortem showed dilatation of left ventricle and hypertrophy of right, much increase of fibrous tissue in both ventricles and fatty degeneration of the left.—*Boston Medical and Surgical Journal*, July 9, 1891.

### *PERMANGANATE OF POTASSIUM FOR BURNS.*

Compresses dipped in a solution of one to ten grammes of potassium permanganate to thirty grammes of water, and frequently renewed, are mentioned by DR. ZUBOFL (*Inter. Pharm. Gén. Arz.*) as a most excellent application for burns of the first and second degrees. Weaker solutions speedily allay the inflammation resulting from blisters, and relieve pain while preventing suppuration.—*Druggists' Circular*, August, 1891.

### *TREATMENT OF BLENNORRHŒA.*

DR. J. W. WHITE, of the University of Pennsylvania, recommends the following for the internal treatment of urethritis, specific and non-specific:

Salol, 7 parts;
Oleo-resin of cubebs, 2 parts;
Balsam of copaiba, 20 parts;
Pepsin, 2 parts.

Mix, and put up in 20-grain capsules. The dose is 1 capsule thrice daily. The doctor uses as an injection from 2 to 10 grains of sulpho-carbolate of zinc dissolved in 1 ounce of a 10-volume solution of hydrogen peroxide.—*National Druggist*, August 15, 1891.

### *INFLUENCE OF AGE ON THE ABSORPTION OF DRUGS.*

It has been positively shown, as a result of DR. YATSUBY'S experiments on healthy male subjects, between the ages of 8 and 80, that, as a general rule, the absorption of medicinal substances takes place more rapidly in the young. Thus iodine was detected in the urine of a boy 8 years old and weighing twenty-five kilogrammes, nineteen minutes after he had taken .15 gramme of potassic iodide, while in the case of a man aged 36, weight 66 kilogrammes, who took .4 gramme, thirty-one minutes were required to produce the same effect. Sodium salicylate was ab-

sorbed by boys and young men in about fifteen minutes, by middle-aged men in twenty minutes, and by old men in twenty-five minutes. An exception, however, occurred in one case, where iodine appeared in the urine of a septuagenarian three minutes sooner than in that of an 18-year old boy.—*Druggists' Circular*, August, 1891.

### *DERMATOL.*

B. FISCHER publishes the following method of preparation, as it is stated that the process by which it is made by Meister, Lucius & Brüning is to be patented: 15 parts bismuth subnitrate are dissolved in 30 parts glacial acetic acid, 200 to 250 parts water added and filtered; to this solution is added, with constant stirring, a warm solution of 5 parts gallic acid in 200 to 250 parts water. The precipitate is first washed by decantation, then on a filter until the washings are free from nitric acid; lastly, it is dried at 100° C. The saffron-yellow powder should not yield anything to alcohol (absence of gallic acid), and should yield not less than fifty-five per cent. bismuth oxide (theory demands 56.66 per cent.).—*Druggists' Circular*, August, 1891.

### *ARSENIC IN THE TREATMENT OF WARTS.*

DR. PAUL MÜLLER, of Hamburg, writing in the *Allgemeine Medicinische Central-Zeitung*, "cannot sufficiently recommend" the internal use of arsenic in the treatment of warts on the hands. He has employed it for more than two years, and always found the warts disappear within three weeks. Another practitioner, Dr. Pullin, who seems to have used arsenic for the same purpose somewhat longer, says that he has known it cure warts in eight days. The dose ordered by Dr. Müller is only at the beginning 2 drops of liquor arsenicalis three times a day for adults, and ¼ drop for children. These quantities are gradually increased.—*Lancet*, July 4, 1891.

### *TREATMENT OF STYE.*

At the commencement, as soon as the irritation is felt, apply compresses dipped in a three or four per cent. aqueous solution of boracic acid. After several hours, carefully wash the borders of the affected lid with the same solution by means of a pledget of absorbent cotton dipped in the fluid. During the night apply compresses wet with boracic acid, or a cataplasm of potato starch made up with the acid solution. The next morning a white spot will show itself in the centre of the little tumor. This should be incised with a sharp, thin lancet, and the compresses again used. A solution of corrosive sublimate, 1 part in 5000 of water, may be used instead of the boracic solution.—*National Druggist*, August 1, 1891.

### *ANOTHER ANTIPYRETIC.*

Another addition to the long list of antipyretics and antineuralgics is announced (*Pharm. Centralb.*, July 23, p. 433). It is described as an oxyquinoline derivative, or, more precisely, as ortho-oxethyl-ana-monoacetylamido-quinoline. The process of preparation is said to be by boiling ortho-oxyquinoline with halogenethyl and sodium hydroxide in alcoholic solution, and treating the ethyl ether so obtained with nitric or nitro-sulphuric acid. A mononitro compound so produced, in which the nitro group is in the "ana" position, is precipitated from an acid solution by ammonia, then reduced to an amido compound by means of tin and hydrochloric acid, and finally has the acetyl group introduced by boiling it with acetic anhydride. The new compound is described as melting at 155°; also as dissolving freely in hot water, alcohol, and dilute acids, and with difficulty in cold water.—*Pharmaceutical Journal and Transactions*, August 1, 1891.

### *THE IODIDE OF CARVACROL.*

Carvacrol, an isomere of thymol, gives iodated derivatives possessed of properties analogous to those of the iodated derivatives of phenol and corresponding acids. The iodide of carvacrol occurs in the form of a yellowish-brown powder, insoluble in water, slightly soluble in alcohol, readily soluble in ether, chloroform, and olive oil. It does not decompose under the influence of light, and has been recommended as a substitute for aristol.—*Journal de Médecine de Paris*, August 2, 1891.

### *NO INJECTIONS FOR GONORRHŒA.*

According to the New York correspondent of the *Southern Medical Record*, DR. JOHN A. WYETH deprecates the employment of injections of any kind in gonorrhœa, and says that they generally do more harm than good. He recommends the use of the oil of gaultheria,

in 6-drop doses, three times a day, as a more efficient and safer remedy for acute urethritis than any other preparation generally advised for that purpose. The common practice of placing a piece of lint or absorbent cotton over the meatus is wrong in practice, as it interferes with the free drainage, and brings the acrid discharges from the urethra in direct contact with the glands and prepuce. A bag of oiled silk or an ordinary cloth should be made large enough to fit loosely over the penis, and held in place by strings which pass up to a belt worn around the waist.—*Practice*, June, 1891.

### *CREOLIN AS A DEODORIZER OF IODOFORM.*

Dr. Varzi recommends the employment of creolin as entirely removing the offensive odor of iodoform, and as depriving the latter of all local irritating action. He employs an ointment composed of 2 parts of iodoform, 1 of creolin, and 25 parts of vaseline.—*Lyon Médicale*, June 21, 1891.

### *ANTIPYRIN IN CHOREA.*

In the *Revue Mensuelle des Maladies de l'Enfance* for August, 1891, Dr. Charles Laroux concludes a long publication, embracing the record of sixty cases of chorea treated by antipyrin, with the following summary:

Of these sixty cases, in forty-one the result was satisfactory, in nineteen unfavorable. Of the forty-one cases, in nineteen the average duration of treatment was twenty-one days, of seven favorable cases the duration of treatment was forty-three days, and of seven fairly satisfactory cases the disease had lasted sixty-eight days and the treatment forty-nine days; nineteen cases were not amenable, either on account of the absence of any effect from antipyrin, from the intolerance to the treatment, in vomiting, diarrhœa, etc., or from the fact that eruptions were produced by the drug. Relapses were frequent, occurring thirty-six times out of sixty. Antipyrin was given in large doses,—45, 60, and 90 grains daily,—according to the age, the author finding that it was necessary to rapidly pass through very large doses; nevertheless, children from 6 to 15 years of age were able in the majority of cases to sustain for many weeks doses of 45 to 90 grains daily. Apart from the eruptions and transient digestive disorders, the author met with no case of severe poisoning, and even when it had to be suspended, from its producing an eruption or indigestion, after a short interval its use could be again proceeded with without unfavorable effect. In no case was albuminuria produced.

### *RULES FOR THE ADMINISTRATION OF COCAINE.*

Dr. Magitot, in the *Repertoire de Pharmacie* for August 10, 1891, formulates the following rules which should govern the employment of cocaine as an anæsthetic:

1. The dose of cocaine injected should be appropriate to the extent of the surface desired to render insensitive. It should not exceed in any case 1 to 1¾ grains. Each dose should be restricted in large surfaces.

2. Cocaine should never be employed in cases of heart-disease, in chronic affections of the respiratory apparatus, or in nervous subjects; and this exclusion applies also to the other anæsthetics.

3. Cocaine should be injected into the interior and not under the derm of the mucous membrane of the skin. This is the intradermic method of Reclus, which should be substituted for the hypodermic method. By this means the introduction of a substance into the vein is avoided and the risk of accidents therefore minimized.

4. The injections should always be practised upon the subject in a recumbent position, and he should only be raised when the operation is to be performed upon the head and mouth, and then only after anæsthesia is complete.

5. The cocaine should be absolutely pure, since, as pointed out by Laborde, its mixture with other alkalies forms highly poisonous compounds.

6. Cocaine should be injected in divided doses, with a few minutes' interval.

7. Suspension of administration, or, as the author terms the method, "fractional injection," renders it possible to guard against the production of sudden symptoms of poisoning.

### *EUROPHEN.*

It is known that by the action of iodine upon bodies of the phenol series in the presence of alkalies, compounds are produced that are claimed to possess antiseptic properties. The best known of these is the "dithymoliodide," which has been introduced into medical practice under the name "aristol." It is now stated that similar properties are pos-

sessed under more advantageous conditions by certain compounds formed in a like manner from substitution derivatives of homologues of phenol, and one of these has just been described under the name "europhen." This substance is said to be produced by the action of iodine upon isobutylorthocresol, which is itself a product of the action at a high temperature of isobutyl alcohol on cresol in the presence of chloride of zinc. In composition europhen is said to contain 27.6 per cent. of iodine, corresponding consequently to one atom of iodine to two molecules of isobutylcresol. At first it was thought that this was a case of simple condensation of two benzole residues, with the substitution of an atom of hydrogen in one of the cresol hydroxyls by an atom of iodine. It is now, however, explained that the simultaneous presence of iodine, alkali, and water would be a condition favorable to the formation of hypoiodous acid, HIO, the oxygen of which, combining with the hydrogen from the hydroxyls of two molecules of cresol would give rise to the splitting off of water, the reaction being represented by the following somewhat doubtful equation:

$$HIO + \begin{matrix} HO-C_6H_3<\begin{matrix}C_4H_9\\CH_3\end{matrix} \\ HO-C_6H_3<\begin{matrix}C_4H_9\\CH_3\end{matrix}\end{matrix} =$$

Isobutylcresol.

$$HI \left\langle \begin{matrix} O-C_6H_3<\begin{matrix}C_4H_9\\CH_3\end{matrix} \\ O-C_6H_3<\begin{matrix}C_4H_9\\CH_3\end{matrix}\end{matrix}\right.$$

Europhen.

Europhen is described as being an amorphous yellow powder, resinous to the touch, and adhering to the mucous membrane or intact cuticle much more readily than iodoform. It is stated to have a peculiar aromatic odor, recalling that of *o* cresol and also of saffron. In water and glycerin it is insoluble, but it is freely soluble in alcohol, ether, chloroform, collodion, traumaticin, and fixed oils. A solution in oil is said to be useful for subcutaneous injection in various affections, but it should be filtered before use. The europhen action seems to be familiar to that of iodoform, by slow liberation of iodine in contact with pus, but it is claimed that the new compound presents the advantage of being comparatively free from odor, non-toxic, and so light that a given weight of europhen will cover five times as much wound surface as the same quantity of iodoform. The selection of a trivial name for this novelty can hardly be deemed a happy one, since "europhen" is sufficiently near to "euphorin," the designation recently applied to phenyl-urethan, to provide for a considerable amount of confusion should both compounds come into general use. —*Pharmaceutical Journal and Transactions*, August 1, 1891.

### *TO ABORT A FURUNCLE.*

The early application of the ointment of the nitrate of mercury is recommended as an effective means of aborting a boil.—*American Druggist*, August 15, 1891.

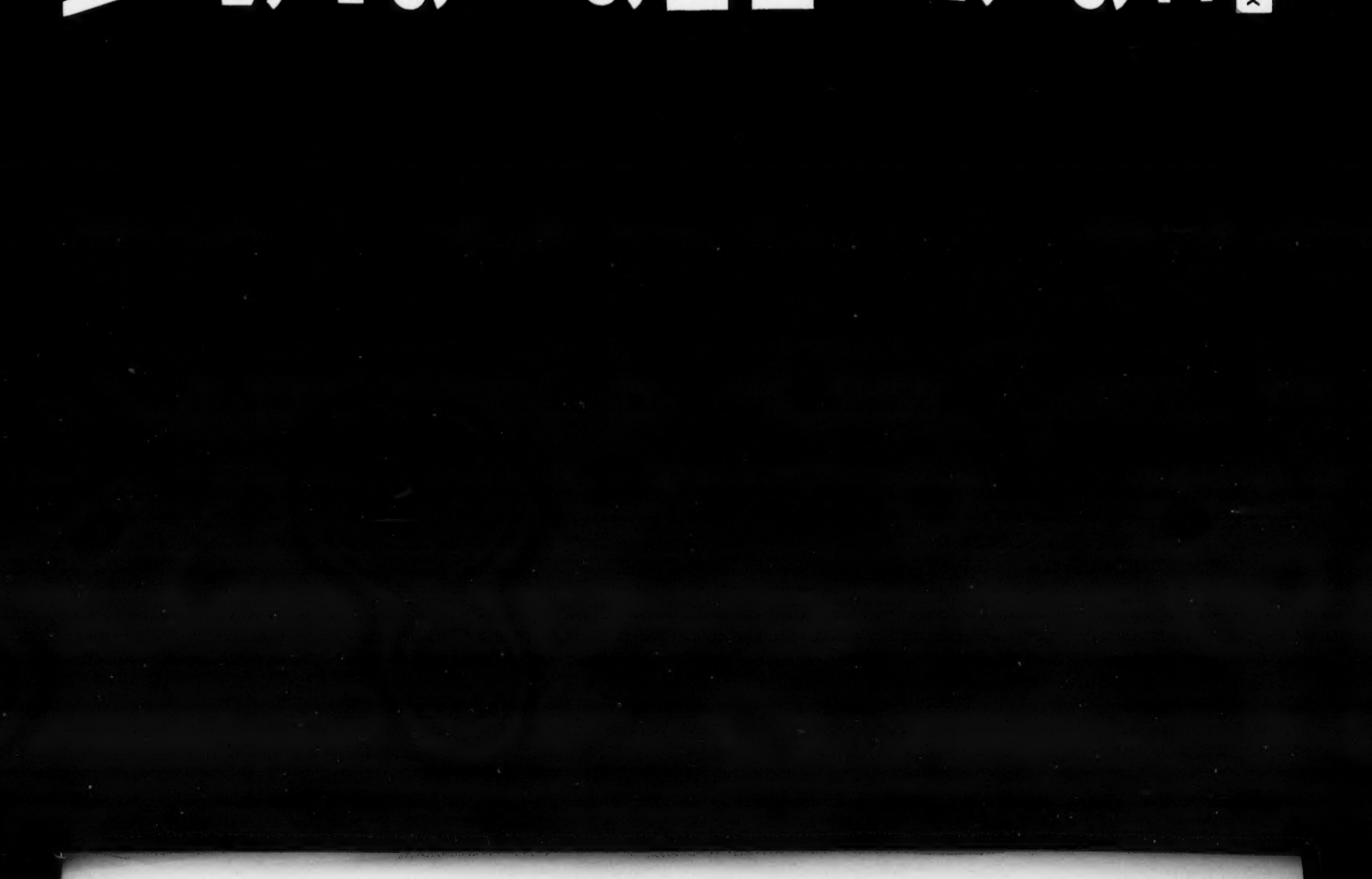
### *AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION.*

The American Electro-Therapeutic Association will hold its first annual meeting at the hall of the College of Physicians, corner of Locust and Thirteenth Streets, Philadelphia, Pa., Thursday, Friday, and Saturday, September 24, 25, and 26, 1891, under the presidency of Dr. G. Betton Massey.

Physicians interested in the discussion of electricity in medicine are invited to attend without further notice.

HORATIO R. BIGELOW, M.D.,
*Chairman Executive Council.*
WM. H. WALLING, M.D.,
*Secretary*,
2005 Arch Street, Philadelphia.

### *MEMBERSHIP IN THE AMERICAN MEDICAL ASSOCIATION.*

This is obtainable at any time by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, DR. RICHARD J. DUNGLISON, Lock Box 1274, Philadelphia, Pa., sending him a certificate or statement that he is in good standing in his own Society, signed by the President and Secretary of said Society, with five dollars for annual dues. Attendance as a delegate at an annual meeting of the Association is not necessary in order to obtain membership. On receipt of the above amount the weekly journal of the Association will be forwarded regularly.

DR. J. P. CROZER GRIFFITH, Professor of Clinical Medicine in the Philadelphia Polyclinic, has also been elected Clinical Professor of the Diseases of Children in the University of Pennsylvania.